

Topic 1
Number

Page 2

1. 5014
2. 30 546
3. 3974
4. 43 412
5. 77 238
6. 65 366
7. 7635
8. 82 412
9. 4906
10. 231 785
11. 633
12. 24 909

Page 3

13. 3346
14. 1728
15. 11 213
16. 15 853
17. 28 831
18. 2071
19. 64 074
20. 382
21. 1509
22. 57 467
23. 41 084
24. 31 328
25. 6369
26. 7918
27. 2 467 656
28. 131 931
29. 3 101 040
30. 173 742

Page 4

- V 50 808
H 89 130
M 3351
T 5852
A 878
O 27 204
G 179 461
C 26 757
U 11 700
W 2013

Page 4 cont...

- S 931
E 75 507
R 534 190
I 5103
L 50390

Why did the boy bring a ladder to school?

HE THOUGHT IT WAS A HIGH SCHOOL

How can you make seven even?

REMOVE THE 'S'

Page 6

31. 85 374
32. 687 180
33. 805 282
34. 301 940
35. 8050
36. 148 770
37. 1 891 032
38. 37 610 952
39. 166 650 843
40. 1 179 936
41. 1256
42. 1574
43. 3265
44. 1245
45. 124
46. 295
47. 1356
48. 2547
49. 235
50. 981

Page 7

51. 480
52. 27 740
53. 13 680
54. \$303 335
55. 1 387 500
56. 176
57. 1049
58. \$14
59. 91 km
60. 63 072 000
61. 630 000
62. \$143 750
63. 17

Page 7 cont...

64. 15 295 kg
65. 3011 hours
66. \$1125

Page 8

- H 20 112
O 93 025
R 184 665
A 1257
D 6543
W 1578
I 434 709
S 764 179
C 265 750
T 659
K 3261
M 2752
F 340 497
E 1 721 174
P 900 711

Why did the student eat his homework?

THE TEACHER TOLD HIM IT WAS A PIECE OF CAKE.

Page 10

67. 88.231
68. 3541.956
69. 3770.06
70. 245.32
71. \$442.15
72. \$2553.60
73. \$134.20
74. \$2.35
75. 5609.485
76. 138.6
77. 177.85
78. 184.17

Page 11

79. 40.418
80. 80.03
81. 6218.19
82. 15 938.29
83. \$4666.80
84. \$202.70
85. \$209.65
86. \$3.10

Page 11 cont...

87. \$46.35
 88. 787.2
 89. \$496.90
 90. \$681.85
 91. \$188.85
 92. \$469 630.35
 93. \$68.83
 94. 1.25 m
 95. over by \$1.85
 96. 1.97 m

Page 12

- U 247.896
 N 322.725
 S 246.538
 H 194.48
 P 168.03
 R 1861.55
 B 1030.522
 C 299.03
 I 148.769
 F 19.702
 D 31.83
 M 643.89
 K 432.208
 E 52.994
 A 783.51

Why was Cinderella a poor rugby player?

BECAUSE SHE HAD A PUMPKIN FOR A COACH

Page 14

97. 48.3
 98. 69.472
 99. 24.62
 100. 2970.24
 101. 49.572
 102. 1.618 96
 103. 13.046 25
 104. 122.97
 105. 105.084
 106. 13 850.43
 107. 520.128
 108. 1502.778
 109. 1135.7
 110. 21 590

Page 14 cont...

111. 962.31
 112. 6592
 113. 25.6
 114. 114.3
 115. 293.2
 116. 1425.6
 117. 3265
 118. 6582.2

Page 15

119. \$596.20
 120. \$16 774.20
 121. \$19.80
 122. \$31.50
 123. \$2695
 124. \$4545.45
 125. 3700.7 km
 126. 30 km/h
 127. 83.824 cm²
 128. \$2248.75
 129. \$1140.20
 130. 3 375 500
 131. 420
 132. 22
 133. 224 km
 134. \$1931.50

Page 16

- K 60.2
 N 8.7142
 S 485.455
 R 65.23
 O 2540
 T 0.1256
 Y 0.382
 W 360.3099
 B 64.7
 U 653
 M 123.1
 G 69.25
 H 42.6189
 E 2368.954
 A 34 840.11

Why were the early days of history called the dark ages?

BECAUSE THERE WERE SO MANY KNIGHTS.

Page 18

135. 260
 136. 90
 137. 1250
 138. 43 780
 139. 400
 140. 65 600
 141. 7000
 142. 510
 143. 400
 144. 200
 145. 2600
 146. 4800
 147. 3600
 148. 8300
 149. 10 200
 150. 1000
 151. 6000
 152. 4000
 153. 2000
 154. 4000
 155. 24 000
 156. 47 000
 157. 20 000
 158. 10 000
 159. 30 000
 160. 50 000
 161. 100 000
 162. 30 000
 163. 130 000
 164. 210 000
 165. 330 000
 166. 200 000

Page 19

167. \$1130
 168. 16
 169. 120 000 km
 170. 34 000 000
 171. \$170 000
 172. \$880 000
 173. 22 000 000
 174. \$210 000
 175. 30 040
 176. \$208 000
 177. \$24 800
 178. \$6 000 000

Page 19 cont...

- 179. \$1710
- 180. \$12 000
- 181. 600
- 182. 170

Page 21

- 183. 0.48
- 184. 6.24
- 185. 16.9
- 186. 100.7
- 187. 55.6
- 188. 0.050
- 189. 20.00
- 190. 464
- 191. 83.00
- 192. 125.514
- 193. 47.1
- 194. 1.0
- 195. 345.00
- 196. 600
- 197. 145.89

- 198. 245.0
- 199. 781.5
- 200. 12.258
- 201. 0.929
- 202. 0.293
- 203. 690.10
- 204. 1296.0
- 205. 13.25
- 206. 485.9
- 207. 16.3
- 208. 9.0
- 209. 79.9
- 210. 165.41
- 211. 51.23
- 212. 8.4

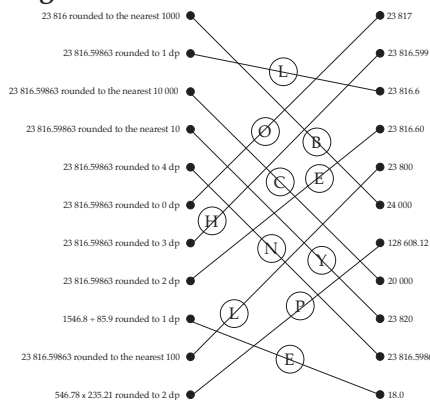
Page 22

- 213. \$1389
- 214. \$1041.50
- 215. \$73
- 216. \$89.71
- 217. \$26

Page 22 cont...

- 218. \$28.60
- 219. \$42 000
- 220. 26.9
- 221. \$113.24
- 222. \$95.33
- 223. \$1311.74
- 224. \$4996.10
- 225. 23.9°C
- 226. 77.4°F
- 227. \$213.13
- 228. 3.3 minutes

Page 23



How do prisoners talk to each other?

BY CELLPHONE.

Page 25

- 229. 36
- 230. 11
- 231. 30
- 232. 9
- 233. 79
- 234. 220
- 235. 18
- 236. 84
- 237. 8
- 238. 42
- 239. 73
- 240. 240
- 241. 88
- 242. 48
- 243. 152
- 244. 54

Page 26

- 245. $(6 + 2) \times 5$
- 246. $(39 - 12) \div 3$
- 247. $8 \times (6 + 24) \div 2$

Page 26 cont...

- 248. $8 \times 24 \div (5 + 7)$
- 249. $150 \div (3 + 7 - 5)$
- 250. $3 + 4 \times (7 + 8) - 9$
- 251. $4^2 + (3 + 5) \div 4 - 8$
- 252. $(18 - 12) + 3^2 \times 4 - 10$
- 253. $5 \times (6 + 48) \div 3 - 8$
- 254. $24 \div (8 + 2^2) \times 2 + 10$
- 255. $48 \times (5 \times 8 + 3 \times 2) = 2208$
- 256. $12 \times (6 + 4 + 3 + 1 + 5) = 228$
- 257. $1150 - 6 \times (185 + 2 + 3) = 10$
- 258. $30 - (5 + (3 \times 2) + (2 \times 4) + 3) = \8
- 259. $500 - (36 + 24) \times 4 = 260$
- 260. $255 - 8 \times (12 + 2 + 5) = 103$

Page 27

$9^1 - 4 - 5 = 0$	$(9 - 5) \times 4^1 = 16$
$1 + 9 - 4 - 5 = 1$	$9 - 1 + 5 + 4 = 17$
$(9 + 1^4) \div 5 = 2$	$9^1 + 4 + 5 = 18$
$9 - 1^4 - 5 = 3$	$1 + 9 + 4 + 5 = 19$
$9 \div 1^4 - 5 = 4$	$19 - 4 + 5 = 20$
$9 + 1^4 - 5 = 5$	$5 \times 4 + 1^9 = 21$
$(9 + 1) + 5 + 4 = 6$	$9 \times (4 - 1) - 5 = 22$
$(9 - 1) + 4 - 5 = 7$	$5 \times 4 + \sqrt{9^1} = 23$
$9^1 + 4 - 5 = 8$	$(9 - 4) \times 5 - 1 = 24$
$1 + 9 + 4 - 5 = 9$	$(9 - 4) \times 5^1 = 25$
$4 \times 5 - (1 + 9) = 10$	$(9 - 4) \times 5 + 1 = 26$
$5 - 4 + 9 + 1 = 11$	$9 \times (4 - 1^5) = 27$
$(9 + 4) - 1^5 = 12$	$4 \times 5 - 1 + 9 = 28$
$(9 + 5) - 1^4 = 13$	$4 \times 5 + 9^1 = 29$
$9 \div 1^4 + 5 = 14$	$9 + (4 \times 5) + 1 = 30$
$(9 + 5) + 1^4 = 15$	$9 \times 4 - 5^1 = 31$

Page 27 cont...

$9 \times 4 - 5 + 1 = 32$	$9 \times 4 + 5 + 1 = 42$
$\sqrt{9} \times (\sqrt{4} \times 5 + 1) = 33$	$49 - 5 - 1 = 43$
$\sqrt{4^5} + \sqrt{9} - 1 = 34$	$9 \times 5 - 1^4 = 44$
$54 - 19 = 35$	$41 - 5 + 9 = 45$
$45 - 9^1 = 36$	$91 - 45 = 46$
$41 + 5 - 9 = 37$	$9 \times 5 + \sqrt{4^1} = 47$
$(9 - 1) \times 5 - \sqrt{4} = 38$	$5 \times 9 + (4 - 1) = 48$
$19 + 4 \times 5 = 39$	$5 \times 9 + 4^1 = 49$
$9 \times 4 + 5 - 1 = 40$	$5 \times 9 + 4 + 1 = 50$
$9 \times 4 + 5^1 = 41$	

Page 29

261. 22
 262. 9
 263. 20
 264. 84
 265. 7
 266. 10
 267. 5
 268. 12
 269. 78
 270. 175

271. a) $\frac{15}{85}$
 b) $\frac{3}{17}$
 272. a) $\frac{12}{90}$
 b) $\frac{2}{15}$

Page 30

273. $11\frac{7}{8}$
 274. $3\frac{2}{7}$
 275. $3\frac{1}{4}$
 276. $5\frac{4}{9}$
 277. $4\frac{5}{12}$

Page 30 cont...

278. $2\frac{8}{9}$
 279. $7\frac{1}{3}$
 280. $1\frac{1}{18}$
 281. $11\frac{1}{4}$
 282. $12\frac{1}{3}$
 283. $4\frac{6}{7}$
 284. $8\frac{8}{13}$
 285. $\frac{23}{7}$
 286. $\frac{7}{6}$
 287. $\frac{140}{13}$
 288. $\frac{7}{2}$
 289. $\frac{14}{5}$
 290. $\frac{4}{3}$
 291. $\frac{19}{8}$
 292. $\frac{23}{12}$
 293. $\frac{19}{4}$
 294. $\frac{41}{15}$
 295. $\frac{47}{13}$
 296. $\frac{75}{11}$
 297. $\frac{7}{3} = 2\frac{1}{3}$
 298. $\frac{128}{5} = 25\frac{3}{5}$
 299. $\frac{548}{3} = 182\frac{2}{3}$
 300. $\frac{68}{5} = 13\frac{3}{5}$

Page 32

301. $1\frac{6}{35}$
 302. $\frac{17}{36}$
 303. $\frac{33}{70}$
 304. $\frac{27}{56}$
 305. $1\frac{17}{18}$
 306. $3\frac{11}{20}$
 307. $3\frac{53}{56}$
 308. $\frac{13}{20}$
 309. $1\frac{19}{30}$
 310. $3\frac{1}{8}$

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311. $1\frac{59}{140}$
 312. $5\frac{51}{70}$
 313. $\frac{1}{8}$
 314. $\frac{28}{45}$
 315. $7\frac{37}{60}$
 316. $\frac{29}{30}$
 317. $2\frac{11}{15}$
 318. $9\frac{5}{12}$
 319. $1\frac{1}{40}$
 320. $\frac{5}{24}$
 321. $2\frac{35}{72}$
 322. $1\frac{11}{24}$
 323. $\frac{9}{40}$
 324. $\frac{4}{35}$

Page 34

- I $\frac{29}{35}$
- H $\frac{1}{36}$
- G $2\frac{1}{6}$
- A $1\frac{7}{8}$
- N $3\frac{37}{45}$
- S $2\frac{1}{35}$
- C $7\frac{9}{40}$
- E $2\frac{1}{12}$
- T $2\frac{26}{55}$
- A $1\frac{17}{105}$
- O $\frac{13}{60}$
- N $3\frac{3}{4}$
- E $1\frac{17}{40}$
- L $7\frac{13}{18}$
- O $4\frac{14}{15}$

Why did the golfer have a spare pair of pants?

IN CASE HE GOT A HOLE IN ONE.

Page 36

- 325. 14
- 326. 12
- 327. 16
- 328. 20
- 329. 70
- 330. 80
- 331. $\square = 2$
- 332. $\square = 5$
- 333. $\square = 40$
- 334. $\square = 4$
- 335. $\square = 9$
- 336. $\square = 66$
- 337. 12
- 338. 90
- 339. 57

Page 36 cont...

- 340. 8
- 341.

3 people	5 people
240 g	400 g
42 g	70 g
84 g	140 g
42 g	70 g
15 g	25 g
3 g	5 g

Page 38

- 342. $\frac{6}{35}$
- 343. $\frac{20}{27}$
- 344. $3\frac{3}{8}$
- 345. $\frac{35}{44}$
- 346. $1\frac{17}{32}$
- 347. $2\frac{2}{9}$
- 348. $5\frac{3}{5}$
- 349. $\frac{55}{288}$
- 350. $19\frac{3}{5}$
- 351. $7\frac{14}{27}$

Page 39

- 352. $2\frac{2}{5}$
- 353. $\frac{96}{343}$
- 354. $\frac{2}{5}$
- 355. $6\frac{74}{105}$
- 356. $\frac{224}{285}$
- 357. $5\frac{5}{16}$
- 358. $\frac{1}{6}$
- 359. $\frac{8}{35}$
- 360. $3\frac{7}{8}$ litres

Page 39 cont...

- 361. $23\frac{5}{6}$ lengths, i.e 23 lengths and 1.25 metres over.
- 362. $\frac{5}{8}$ m
- 363. $\frac{4}{7}$
- 364. Brother = $\frac{15}{32}$
Undivided = $\frac{5}{32}$
- 365. $\frac{12}{35}$ of 455 = 156 points

Page 40

- T $\frac{8}{45}$
- Y $1\frac{1}{14}$
- R $\frac{6}{7}$
- M $3\frac{5}{9}$
- R 3
- T $1\frac{59}{60}$
- D $5\frac{1}{18}$
- O $1\frac{2}{11}$
- K $3\frac{5}{21}$
- E $\frac{3}{35}$
- U $1\frac{7}{8}$
- A $4\frac{11}{20}$
- E $\frac{18}{19}$
- W $2\frac{1}{7}$
- E $5\frac{1}{2}$

What did the alien say to the gardener?

TAKE ME TO YOUR WEEDER

Page 41

- 366. $\square = 42$
- 367. $\square = 96$
- 368. $\square = 64$
- 369. $\square = 72$
- 370. $4\frac{1}{2}$
- 371. a) $\frac{1}{30}$
b) $1\frac{1}{2}$ km
- 372. 108
- 373. 21
- 374. 120
- 375. $\frac{6}{7}$
- 376. $2\frac{2}{5}$
- 377. $16\frac{2}{3}$
- 378. 184 ha
- 379. \$600

Page 43

- 380. 0.2
- 381. 0.15
- 382. 0.225
- 383. 0.875
- 384. 0.95
- 385. 0.52
- 386. 0.265
- 387. 0.93
- 388. 2.04
- 389. 4.06
- 390. 3.65
- 391. 4.85
- 392. 0.003
- 393. 7.4

Page 44

- 394. $\frac{4}{5}$
- 395. $\frac{3}{4}$
- 396. $\frac{1}{20}$
- 397. $\frac{2}{5}$
- 398. $\frac{13}{20}$

Page 44 cont...

- 399. $\frac{9}{125}$
- 400. $\frac{37}{200}$
- 401. $\frac{2}{25}$
- 402. $\frac{3}{25}$
- 403. $\frac{9}{5}$
- 404. $\frac{51}{20}$
- 405. $\frac{89}{20}$
- 406. 0.125
- 407. $\frac{7}{20}$
- 408. 0.8125
- 409. $\frac{13}{25}$
- 410. 0.575
- 411. 0.075

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Convert 2.3 to a simplified fraction \rightarrow $\frac{23}{10}$ (P)

Convert $\frac{17}{20}$ to a decimal \rightarrow 0.85 (L)

Convert 0.085 to a simplified fraction \rightarrow $\frac{17}{200}$ (R)

Convert $\frac{48}{15}$ to a decimal \rightarrow 3.2 (A)

Convert 0.165 to a simplified fraction \rightarrow $\frac{11}{65}$ (S)

Convert $\frac{208}{650}$ to a decimal \rightarrow 0.32 (A)

Convert 2.03 to a simplified fraction \rightarrow $\frac{203}{100}$ (O)

Convert $\frac{15}{80}$ to a decimal \rightarrow 0.1875 (D)

Convert 1.495 to a simplified fraction \rightarrow $\frac{299}{200}$ (Y)

Convert $3\frac{16}{25}$ to a decimal \rightarrow 3.64 (N)

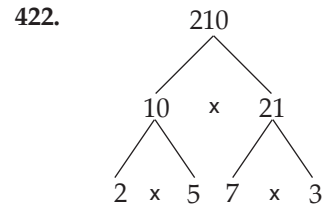
Convert 3.02 to a simplified fraction \rightarrow $\frac{302}{50}$ (U)

Why did the parrot wear a raincoat?
SO HE COULD BE POLYUNSATURATED

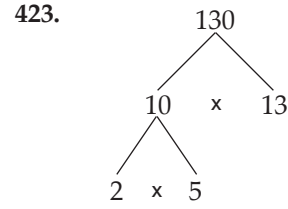
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- 412. 5, 19
- 413. 31, 37, 41, 43
- 414. 2, 5, 13, 29, 47
- 415. 53, 59
- 416. 11, 23, 61, 67
- 417. 71, 73, 79
- 418. 3, 17, 83, 89
- 419. 97, 101
- 420. 103
- 421. 131, 137, 139

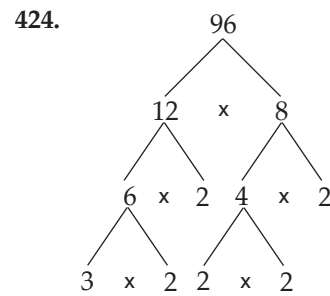
Page 47 cont...



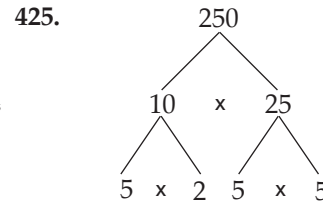
$2 \times 3 \times 5 \times 7$



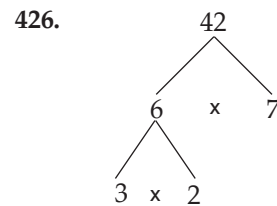
$2 \times 5 \times 13$



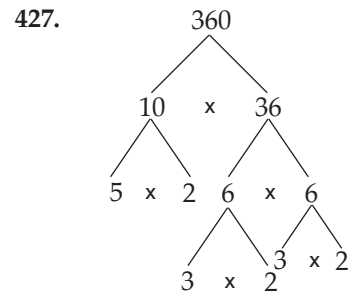
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$2 \times 5 \times 5 \times 5$



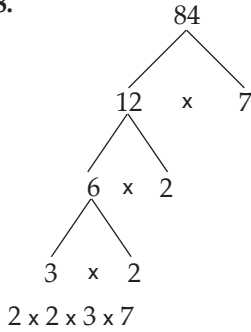
$2 \times 3 \times 7$



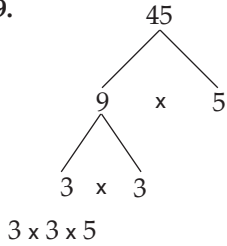
$2 \times 2 \times 2 \times 3 \times 3 \times 5$

Page 47 cont...

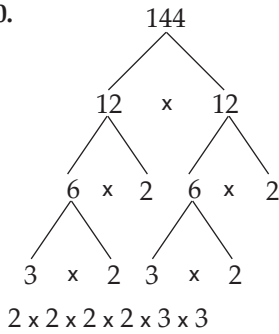
428.



429.



430.



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66	82	10	130	4	23	1	72	15	23	29	36
47	29	83	61	9	109	101	19	16	48	120	150
71	108	49	179	174	196	198	157	32	101	149	198
191	100	20	137	3	78	139	59	44	96	6	19
163	23	87	18	173	97	163	69	81	42	43	73
150	2	169	14	6	133	177	165	138	182	194	1
37	11	183	180	170	165	71	17	37	154	157	167
193	198	181	130	9	21	55	4	108	109	130	166
197	200	24	15	20	179	1	14	22	30	170	8
5	199	101	73	54	102	100	148	136	11	83	173
1	8	6	83	69	45	12	194	175	130	185	160
10	33	141	17	117	174	25	66	74	120	90	91
132	150	156	19	139	137	103	97	199	88	166	168
22	6	77	180	106	4	49	63	151	153	81	91
93	104	129	135	119	183	174	72	113	159	24	156
18	21	114	195	106	110	147	70	127	71	79	99
140	166	172	195	180	177	114	200	48	160	11	102
88	74	81	91	93	141	160	169	147	30	101	100
44	190	177	155	123	129	88	64	63	12	191	193
12	11	7	3	113	101	6	85	49	131	77	31
88	197	190	184	183	67	47	30	165	143	119	29
2	14	38	91	106	138	141	183	163	89	2	131
20	165	198	90	33	11	4	195	89	141	133	123

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- 431. 12
- 432. -23
- 433. -11
- 434. -6
- 435. -7
- 436. -45

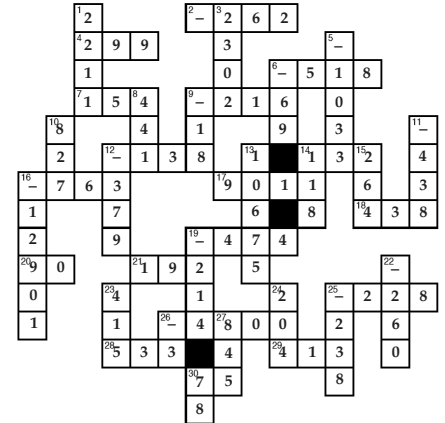
Page 50 cont...

- 437. 25
- 438. -19
- 439. -76
- 440. 26
- Page 51
- 441. -19
- 442. 6
- 443. 1
- 444. 38
- 445. -21
- 446. -86
- 447. 34
- 448. -29
- 449. -18
- 450. 6
- 451. -74
- 452. -15
- 453. 41
- 454. -29
- 455. -27
- 456. -55
- 457. -26
- 458. -12
- 459. -13
- 460. -36
- 461. -26
- 462. 24
- 463. 14
- 464. -1
- 465. -72
- 466. 79
- 467. -34
- 468. -165
- 469. -17
- 470. 17
- Page 52
- 471. Baghdad: 50°C
Quebec: 40°C
New York: 32°C
Juneau: 23°C
Beijing: 39°C
Oslo: 26°C
- 472. 155 m
- 473. 15 m (-15)
- 474. 1847 m
- 475. -\$19 050

Page 52 cont...

- 476. -\$4784
- 477. a) 425 BC (-425)
b) 315 BC (-315)
- 478. 36 m (-36)
- 479. a) 138 m (-138)
b) 107 m (-107)
- 480. \$179
- 481. 300 m (-300)

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- 482. 63
- 483. -80
- 484. -4
- 485. 13
- 486. -90
- 487. 224
- 488. -6
- 489. -30
- 490. 336
- 491. -240
- 492. 14
- 493. -30
- 494. -144
- 495. 320
- 496. -4
- 497. 4
- 498. 864
- 499. -500
- 500. 15
- 501. 35
- 502. -7
- 503. 1008
- 504. 23
- 505. -1425
- 506. -672

Page 55 cont...

- 507. 4050
- 508. 7
- 509. -15
- 510. 2368
- 511. -300

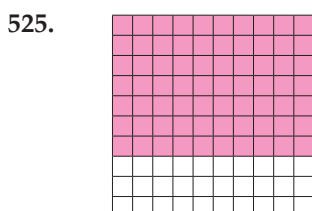
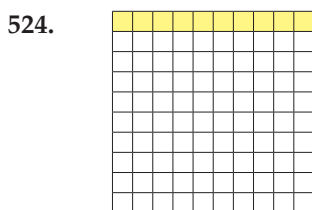
Page 56

- 512. (\$140 OD) -\$140
- 513. \$45 750 OD (-\$45 750)
- 514. \$28 750 (-\$28 750)
- 515. \$3780 OD (-\$3780)
- 516. 12 days
- 517. 16 hours
- 518. a) \$15 m (-\$15 m)
b) \$1.875 m (-\$1.875 m)
- 519. \$1.95 million
- 520. 3637 m (-3637 m)
- 521. 420 m below sea level
(-420 m)
- 522. \$560 OD (-\$560)
- 523. \$38 200 (-\$38 200)

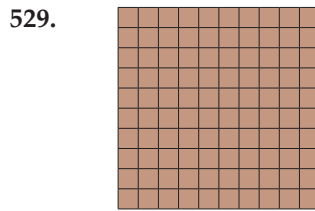
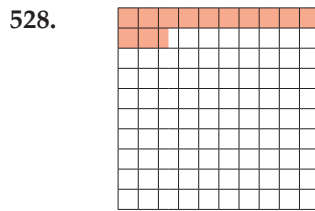
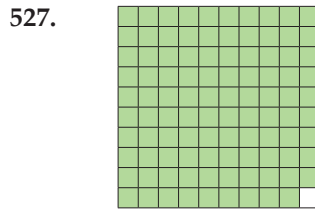
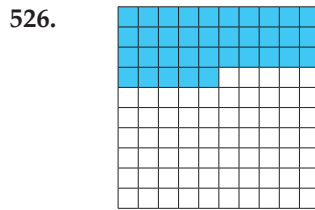
Page 57

$\frac{-18 \times 14}{-380 \div 19}$ 1	$\frac{-55 \times -16}{-28 \times 15}$ 2	$\frac{675 \div 15 \div -3}{-380 \div 19}$ 3
$\frac{20 \times 16 \times 3}{-10 \times 5 \div 2}$ 4	$\frac{12 \times 15 \times 4}{-25}$ 5	$\frac{6 \times 15 \div -3}{-8640 \div 288}$ 6
$\frac{48 \times 25 \times 12}{-10 \times 11 \times 14}$ 7	$\frac{21 \div 4 \div 4 \div 4}{-2688 \div -420 \div 20}$ 8	$\frac{9 \div 10 \times 20 \div -16}{6400 \div 20 \div -15}$ 9

Page 59



Page 59 cont...



- 530. $\frac{1}{2}$
- 531. $\frac{16}{25}$
- 532. 1
- 533. $\frac{6}{5}$
- 534. $\frac{19}{100}$
- 535. $\frac{1}{8}$
- 536. $\frac{3}{2}$
- 537. $\frac{1}{25}$
- 538. $\frac{7}{200}$
- 539. 9%
- 540. 38%
- 541. 130%
- 542. 18.5%
- 543. 5.4%
- 544. 95%
- 545. 12.5%

Page 59 cont...

- 546. 145%
- 547. 0.5%
- 548. 0.05
- 549. 0.72
- 550. 1.10
- 551. 0.065
- 552. 0.358
- 553. 0.0065
- 554. 0.019
- 555. 1.254
- 556. 0.99

Page 60

- 557. $\frac{17}{20}$
- 558. 0.065
- 559. 8%
- 560. 125%
- 561. 0.785
- 562. $\frac{21}{25}$
- 563. $\frac{3}{20}$
- 564. 15
- 565. 60
- 566. 25%
- 567. 0.025
- 568. 4%
- 569. 0.0075
- 570. 95%
- 571. 45
- 572. 67.6%
- 573. $\frac{4}{25}$
- 574. 0.25%

Page 62

- 575. 30%
- 576. 45%
- 577. 38%
- 578. 56%
- 579. 75%
- 580. 87.5%
- 581. 42.5%
- 582. 62.5%
- 583. 92%
- 584. 76%
- 585. 53.3% (1 dp)
- 586. 37.5%

Page 62 cont...

- 587. 70%
- 588. 68.75%
- 589. 41.7% (1 dp)
- 590. 8%
- 591. 81%
- 592. 12%
- 593. 15%
- 594. 5%

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- 595. 20
- 596. 75
- 597. 16
- 598. 126
- 599. 54
- 600. \$92
- 601. 156
- 602. 30
- 603. 42
- 604. 36
- 605. 60%
- 606. 12%
- 607. 25%
- 608. 30%
- 609. 55%
- 610. 48%
- 611. \$22 500
- 612. \$1500
- 613. \$11.50
- 614. 2.52 kg

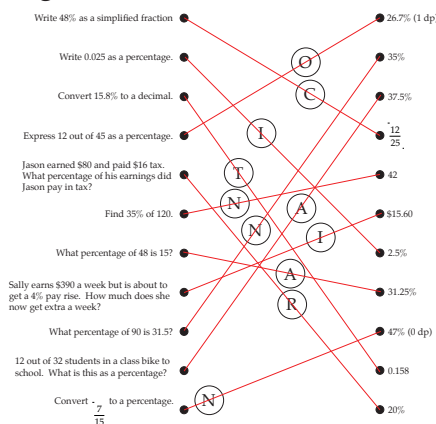
Page 65

- 615. \$168
- 616. \$1350
- 617. 2.6 secs
- 618. 3600
- 619. \$840
- 620. 43.2 ha
- 621. a) $\frac{3}{20}$
b) \$444
c) \$2516
d) \$150.96
e) \$222.25 per month
- 622. a) 37.5%
b) 10 play cricket
c) 21
d) $\frac{7}{20}$ and 0.35

Page 65 Q622 cont...

- e) 14
- f) 1.4

Page 66



What would a country be called if everyone in it lived in their cars?

AN IN-CAR-NATION.

Page 68

- 623. 3 : 2
- 624. 7 : 10
- 625. 9 : 4
- 626. 2 : 21
- 627. 1 : 4
- 628. 32 : 11
- 629. 4 m : 11 m
- 630. 2 kg : 9 kg
- 631. \$7 : \$18
- 632. 2 t : 5 t
- 633. 4 bags : 9 bags
- 634. 3 km/h : 8 km/h
- 635. 1 m : 10 m
- 636. 1 cm : 8 cm
- 637. 1 min : 12 min
- 638. 1 kg : 4 kg
- 639. 1 cm : 50 cm
- 640. 3 m² : 2m²
- 641. \$63 and \$45
- 642. 4, 8 and 12
- 643. \$5500 and \$3500
- 644. 54 kg
- 645. 64 teachers
- 646. \$3 : \$2
- 647. 13 : 16
- 648. \$450
- Page 69
- 649. a) 13 : 12
b) 12 : 25

Page 69 Q649 cont...

- c) 25 : 13
- 650. a) 5 : 4
b) 4 : 15
c) 5 : 4 : 6

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- 651. 216
- 652. 2401
- 653. 1024
- 654. 12
- 655. 128
- 656. 1000
- 657. 6
- 658. 5040
- 659. 2
- 660. 18
- 661. 126
- 662. 17
- 663. 12
- 664. 8
- 665. 648
- 666. 8⁴ = 4096
- 667. 3⁷ = 2187
- 668. 11³ = 1331
- 669. 2⁴ × 3⁴ = 1296
- 670. 5³ × 10² = 12 500
- 671. 6² × 4! = 864
- 672. 6² + 5² + 4² = 77
- 673. 10⁴ - 10² = 9900
- 674. 8⁴ ÷ 4² = 256
- 675. 6² × 4! = 864
- 676. 3! + 4! = 30
- 677. 4! ÷ 3! = 4
- Page 72
- 678. 7
- 679. 12
- 680. 13
- 681. 54
- 682. 100
- 683. 25
- 684. 5
- 685. 63
- 686. 1
- 686. 64
- 688. 10 000

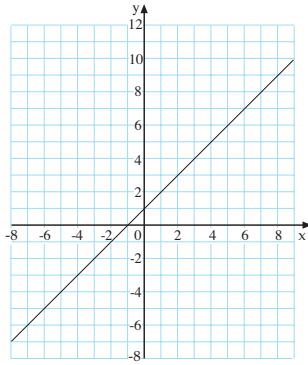
Page 72 cont...

- 689. 60
- 690. 1
- 691. 4
- 692. 1
- 693. 64
- 694. 5.9
- 695. 11.8
- 696. 9.7
- 697. 20.5
- 698. 3.6
- 699. 9.5
- 700. 44.9
- 701. 11.7
- 702. 9.4
- 703. 2.7

Topic 2
Algebra

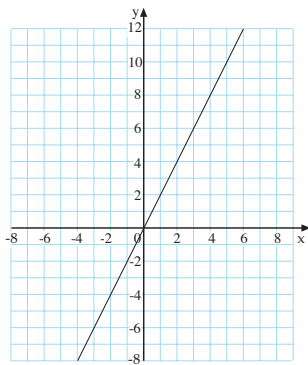
Page 74

1.



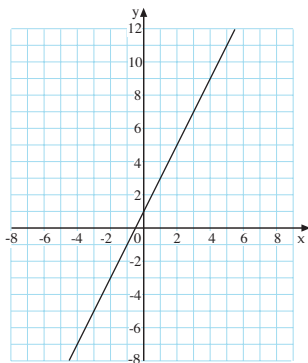
Add 1 to x to get y.

2.



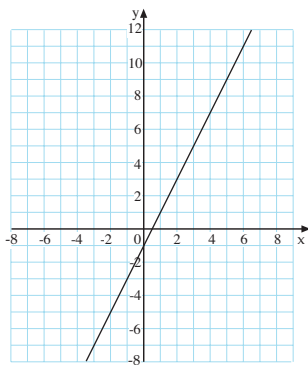
Multiply x by 2 to get y.

3.



Multiply x by 2 and add 1 to get y.

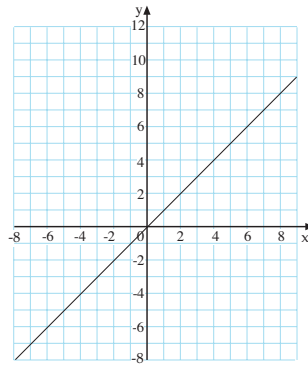
4.



Multiply x by 2 and subtract 1 to get y.

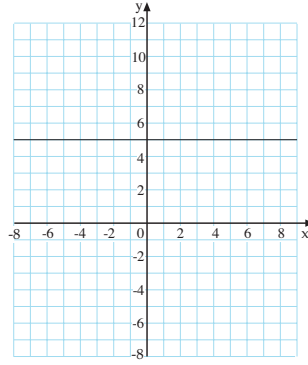
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5.



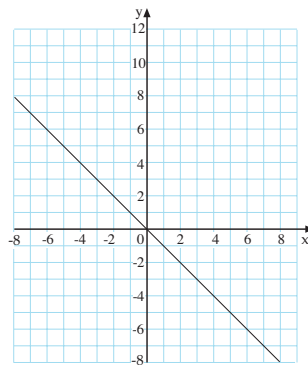
y is the same as x.

6.



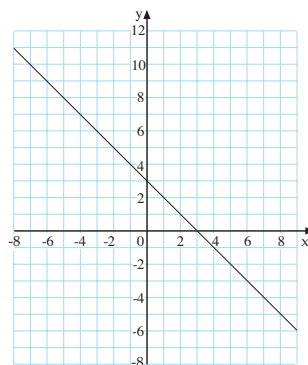
y always equals 5.

7.



Multiply x by -1 to get y.

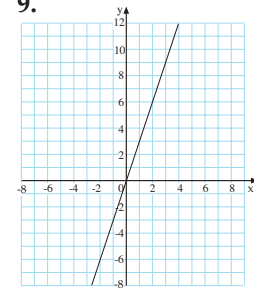
8.



Multiply x by -1 and add 3 to get y.

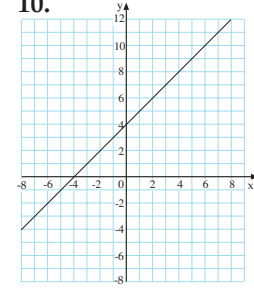
Page 75 cont...

9.



x	y = 3x
-3	-9
-2	-6
-1	-3
0	0
1	3
2	6
3	9

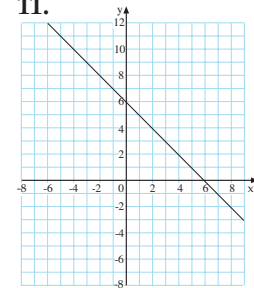
10.



x	y = x + 4
-3	1
-2	2
-1	3
0	4
1	5
2	6
3	7

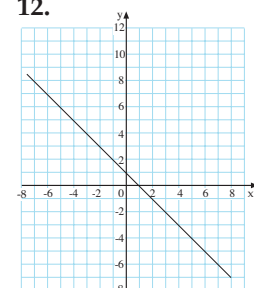
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11.



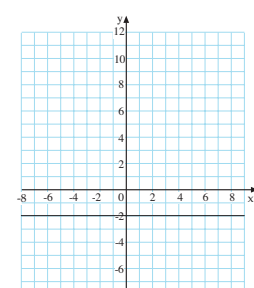
x	y = 6 - x
-3	9
-2	8
-1	7
0	6
1	5
2	4
3	3

12.



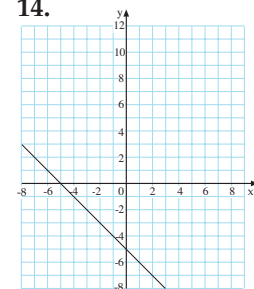
x	y = -x + 1
-3	4
-2	3
-1	2
0	1
1	0
2	-1
3	-2

13.



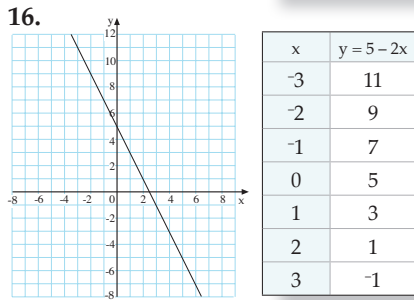
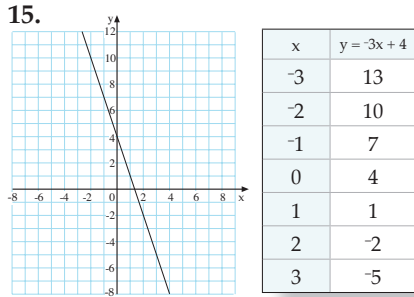
x	y = -2
-3	-2
-2	-2
-1	-2
0	-2
1	-2
2	-2
3	-2

14.



x	y = -x - 5
-3	-2
-2	-3
-1	-4
0	-5
1	-6
2	-7
3	-8

Page 76 cont...

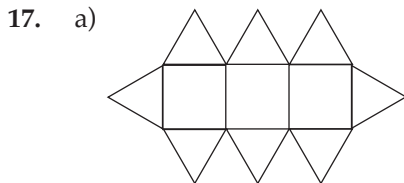


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Why did the scarecrow win the Nobel Prize?

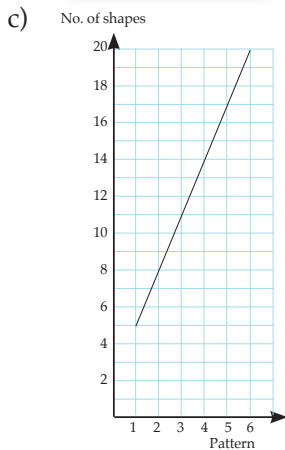
BECAUSE HE WAS OUTSTANDING IN HIS FIELD.

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b)

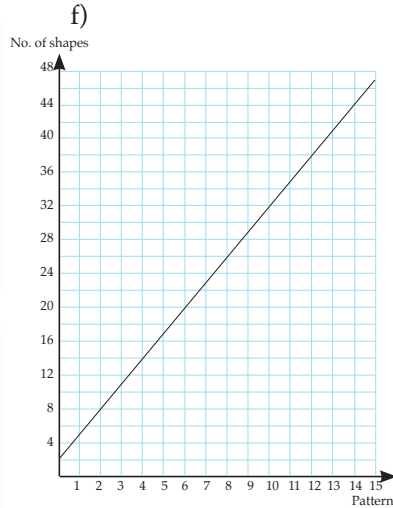
Pattern	No. of shapes
1	5
2	8
3	11
4	14
5	17
6	20



d) C Multiply the pattern number by 3 and add 2.

Page 78 Q17 cont...

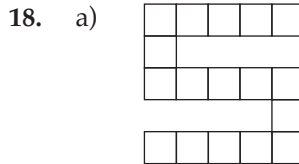
e) 32



g) 38

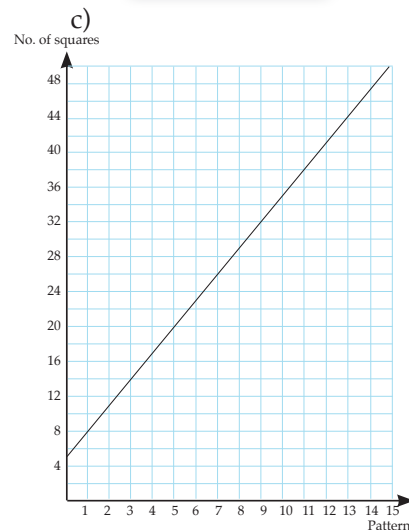
h) 15

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b)

Pattern	No. of squares
1	8
2	11
3	14
4	17
5	20
6	23



d) B Multiply the pattern number by 3 and add 5.

e) 35

f) 305

g) 8

h) 13

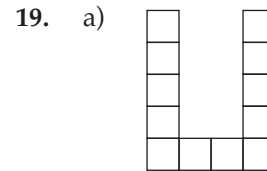
Page 79 Q18 cont...

i)

Pattern	No. of squares	Differences
1	8	
2	11	3
3	14	3
4	17	3
5	20	3
6	23	3

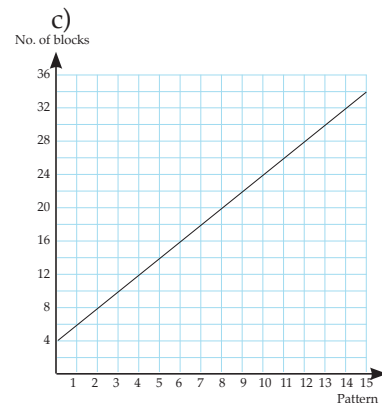
j) They are the same (constant)

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b)

Pattern	No. of blocks
1	6
2	8
3	10
4	12
5	14
6	16



d) 22

e) 34

f) D Multiply the pattern number by 2 and add 4.

g) 13

h)

Pattern	No. of blocks	Differences
1	6	
2	8	2
3	10	2
4	12	2
5	14	2
6	16	2

i) They are the same (constant)

j) The differences and the number we multiply the pattern number by are the same.

k) It gives us the number we multiply the pattern number by.

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20.

Term	Sequence	Differences
1	2	
2	6	4
3	10	4
4	14	4
5	18	4
6	22	4
7	26	4

Multiply the term number by 4 and subtract 2.

21.

Term	Sequence	Differences
1	3	
2	8	5
3	13	5
4	18	5
5	23	5
6	28	5
7	33	5

Multiply the term number by 5 and subtract 2.

22.

Term	Sequence	Differences
1	1	
2	4	3
3	7	3
4	10	3
5	13	3
6	16	3
7	19	3

Multiply the term number by 3 and subtract 2.

23.

Term	Sequence	Differences
1	7	
2	6	-1
3	5	-1
4	4	-1
5	3	-1
6	2	-1
7	1	-1

Multiply the term number by -1 and add 8.

24.

Term	Sequence	Differences
1	3	
2	9	6
3	15	6
4	21	6
5	27	6
6	33	6
7	39	6

Multiply the term number by 6 and subtract 3.

25.

Term	Sequence	Differences
1	-6	
2	-10	-4
3	-14	-4
4	-18	-4
5	-22	-4
6	-26	-4
7	-30	-4

Multiply the term number by -4 and subtract 2.

Page 82 cont...

26.

Term	Sequence	Differences
1	10	
2	7	-3
3	4	-3
4	1	-3
5	-2	-3
6	-5	-3
7	-8	-3

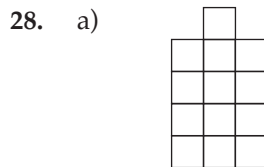
Multiply the term number by -3 and add 13.

27.

Term	Sequence	Differences
1	10.5	
2	15	4.5
3	19.5	4.5
4	24	4.5
5	28.5	4.5
6	33	4.5
7	37.5	4.5

Multiply the term number by 4.5 and add 6.

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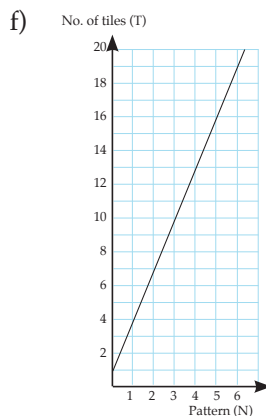
b)

Pattern	Number of tiles	Differences
1	4	
2	7	3
3	10	3
4	13	3
5	16	3
6	19	3

c) Since the differences are constant, relationship must be linear.

d) Three times the pattern number plus one.

e) $T = 3N + 1$



g) 31

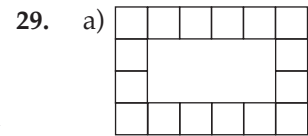
h) 151

i) $3N + 1 = 46$
 $3N = 45$
 $N = 15$

Page 83 Q28 cont...

j) $3N + 1 = 76$
 $3N = 75$
 $N = 25$

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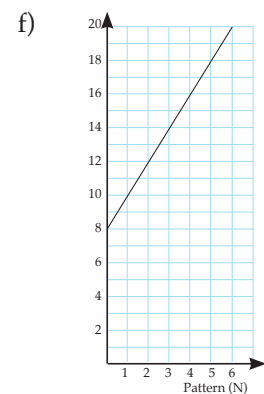
b)

Pattern	Number of tiles	Differences
1	10	
2	12	2
3	14	2
4	16	2
5	18	2
6	20	2

c) Since the differences are constant, relationship must be linear.

d) Two times the pattern number plus eight.

e) $T = 2N + 8$



g) 28

h) 108

i) $2N + 8 = 30$
 $2N = 22$
 $N = 11$

j) $2N + 8 = 78$
 $2N = 70$
 $N = 35$

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30. $x = 13$

31. $x = 17$

32. $x = 22$

33. $x = 39$

34. $x = -2$

35. $x = 5$

36. $x = -13$

37. $x = 7$

38. $x = 33$

39. $x = 32$

40. $x = -33$

Page 86 cont...

41. $x = -24$
 42. $x = -53$
 43. $x = 15$
 44. $x = 36$
 45. $x = 51$

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46. $x + 32 = 50$
 $x = 18$ (\$18)
 47. $x + 13 = 24$
 $x = 11$ (years old)
 48. $x - 48 = 65$
 $x = 113$ (\$113)
 49. $x - 16 = 25$
 $x = 41$
 50. $x - 39 = 52$
 $x = 91$ (cards)
 51. $x + 27 = 46$
 $x = 19$ (years old)
 52. $x + 15 = 36$
 $x = 21$ (days)
 53. $x - 83 = 55$
 $x = 138$ (\$138)
 54. $x + 37 = 85$
 $x = 48$ (jerseys)
 55. $x - 65 = 48$
 $x = 113$
 56. $x - 85 = 37$
 $x = 122$
 57. $x - 75 = 19$
 $x = 94$

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58. $x = 8$
 59. $x = 9$
 60. $x = 7$
 61. $x = 12$
 62. $x = -7$
 63. $x = -11$
 64. $x = 16$
 65. $x = 9$
 66. $x = -15$
 67. $x = -13$
 68. $x = -18$
 69. $x = -22$
 70. $x = \frac{32}{5}$ (6.4)
 71. $x = \frac{-38}{4}$ (-9.5)
 72. $x = \frac{55}{7}$ (7.9 (1 dp))
 73. $x = \frac{-20}{3}$ (-6.7 (1 dp))

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74. $80x = 240$
 $x = 3$ (hours)
 75. $4x = 84$
 $x = 21$
 76. $6x = 90$
 $x = 15$ (minutes)
 77. $7x = 315$
 $x = 45$ (m)
 78. $-7x = -112$
 $x = 16$
 79. $6x = -108$
 $x = -18$
 80. $15x = 525$
 $x = 35$ (\$35)
 81. $6x = 5.70$
 $x = 0.95$ (\$0.95)
 82. $12x = 1950$
 $x = 162.5$ (\$162.50)
 83. $8x = 440\ 000$
 $x = 55\ 000$ (\$55 000)
 84. $12x = 786\ 000$
 $x = 65\ 500$ (\$65 500)
 85. $15x = 4\ 275\ 000$
 $x = 285\ 000$ (\$285 000)

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86. $x = 16$
 87. $x = 60$
 88. $x = -45$
 89. $x = -96$
 90. $x = 128$
 91. $x = -51$
 92. $x = -154$
 93. $x = 135$
 94. $x = 126$
 95. $x = 52$
 96. $x = -30$
 97. $x = -126$
 98. $x = 117$
 99. $x = 204$

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100. $\frac{x}{15} = 12$
 $x = 180$
 101. $\frac{x}{16} = -12$
 $x = -192$
 102. $\frac{x}{8} = 135$
 $x = 1080$ (\$1080)
 103. $\frac{x}{9} = 85$
 $x = 765$ (metres)

Page 93 cont...

104. $\frac{x}{3} = 65$
 $x = 195$
 105. $\frac{x}{7} = -15$
 $x = -105$
 106. $\frac{x}{40} = 38$
 $x = 1520$ (\$1520)
 107. $\frac{x}{4} = 16$
 $x = 64$ (\$64)
 108. $\frac{x}{7} = 12.50$
 $x = 87.5$ (\$87.50)
 109. $\frac{x}{8} = 12\ 500$
 $x = 100\ 000$ (\$100 000)
 110. $\frac{x}{3} + 4 = 12$
 $\frac{x}{3} = 8$
 $x = 24$
 111. $\frac{x}{5} - 8 = 16$
 $\frac{x}{5} = 24$
 $x = 120$

Page 95

112. $x = 11$
 113. $x = 6$
 114. $x = 9$
 115. $x = -13$
 116. $x = 16$
 117. $x = 16$
 118. $x = 20$
 119. $x = -11$

120. $x = -15$

121. $x = -14$

122. $x = -8$

123. $x = -1$

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124. $4x + 16 = 48$
 $x = 8$
 125. $2x - 11 = 51$
 $x = 31$
 126. $4x + 35 = 103$
 $x = 17$
 127. $3x - 19 = 41$
 $x = 20$
 128. $45x + 90 = 630$
 $x = 12$ (days)
 129. $8x + 15 = 135$
 $x = 15$ (sessions)

Page 96 cont...

130. $95x + 30 = 790$
 $x = 8$ (nights)
 131. $4x - 95 = 645$
 $x = 185$ (\$185)
 132. $10x - 35 = 145$
 $x = 18$ (\$18)
 133. $3x - 15 = 72$
 $x = 29$

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134. $x + 5$
 135. $e + 12$
 136. $b - 6$
 137. $a + b + c$
 138. $k + 8$
 139. $5 - x$
 140. $n - 4$
 141. $4 - n$
 142. $\frac{x}{2} + 4$
 143. $\frac{p}{4} - 5$
 144. $2n + 7$
 145. $2x - 3$
 146. $\frac{x+2}{5}$
 147. $4x - 7$
 148. $2n - 4$
 149. $3(x + 6)$
 150. $7(n - 2)$
 151. $\frac{a+b+c}{2}$
 152. $z(x - y)$
 153. $\frac{x-y}{z}$
 154. $3n - 15$
 155. $n^2 + 3$
 156. xyz
 157. $5(n + 3)$

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158. $3a + 4$
 159. $5p - 2$
 160. $5b - 3$
 161. $a + c$
 162. $\frac{500}{x}$
 163. $9K$
 164. $2s + 3.5r$
 165. $6.5h + 2.5c$
 166. $\frac{a}{6}$
 167. $N - x$
 168. $x - 5n$
 169. $\frac{x-10}{3}$

Page 99 cont...

170. $2(x + 10)$
 171. $3(y - 15)$
 172. $\frac{a+b+c}{3}$
 173. $8(n - 12)$

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174. $x + 18 = 45$
 $x = 27$
 175. $x - 7 = -15$
 $x = -8$
 176. $4x = -60$
 $x = -15$
 177. $-6x = 78$
 $x = -13$
 178. $\frac{x}{7} = 18$
 $x = 126$
 179. $\frac{x}{-4} = 45$
 $x = -180$
 180. $2x + 7 = 33$
 $x = 13$
 181. $4x - 3 = 25$
 $x = 7$
 182. $-3x + 5 = -22$
 $x = 9$
 183. $-5x - 7 = 23$
 $x = -6$
 184. $\frac{x}{2} - 6 = 18$
 $x = 48$
 185. $\frac{x}{-4} + 6 = -3$
 $x = 36$

Page 102

186. 33
 187. 30
 188. -36
 189. 4
 190. -8
 191. 60
 192. 4
 193. 3
 194. -6
 195. 22
 196. 0
 197. 106
 198. -4
 199. 14
 200. 39
 201. -24

Page 102 cont...

202. 64
 203. 507
 204. 54
 205. 38
 206. -150
 207. -28

Page 103

208. a) \$45
 b) $7.5N = 120$
 $N = 16$
 c) $C = 8.25N$
 209. a) \$114
 b) \$29.40
 c) $9.5B = 285$
 $B = 30$
 210. a) \$13
 b) \$51
 c) $\frac{C}{4} = 35$
 $C = \$140$
 211. a) \$97
 b) \$425
 c) $\frac{I}{6} = 107$
 $I = \$642$

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212. a) 28
 b) $6D - 2 = 70$
 $D = 12$
 213. a) \$55
 b) $15C + 10 = 100$
 $C = 6$
 214. a) \$525
 b) $45M - 15 = 795$
 $M = 18$
 c) $T = 60M - 15$
 215. a) \$365
 b) $35D + 15 = 540$
 $D = 15$
 c) $C = 40D + 15$

Page 106

216. $2n, -3n$
 $4y, 15y$
217. $k, 6k$
 $-p, 2p$
 $3x, 4x$
218. $-7, 9$
 $m, 4m$
 $-q, 6q$
219. $-4ab, 6ab$
 $9x, -12x$
 $3y, 7y$
 $3xy$
220. $6, -9$
 $-5b, b$
 $2a, 7a$
 ab
221. $-ab, 3ab$
 $5pq, 8pq$
 4
222. $5w + 1$
223. $2a + 2b - 3$
224. $2x + 4y$
225. $9p$
226. $6q + 4$
227. $-2x + 4xy + 12$
228. $9 + p$
229. $-3x - 3$
230. $5a + b$
231. -6
232. $4x^2 - 4$
233. $6m^2 + 5m$
234. $-y^2 + 14$
235. $18ab - 4a + 8$
236. $-2xy - 5$
237. $7k^2 + 2k - 6$
- Page 108
238. y^4
239. k^2
240. $2q^3$
241. x^2y^2
242. $12q^2$
243. $8m^3$
244. e^3f^2g
245. $3y^4$
246. $2a^2b$
247. $24p^3$
248. x^4
249. y^8

Page 108 cont...

250. $8x^3$
251. $8m^3n$
252. $6x^2y^2$
253. $24k^5$
254. $36q^3$
255. $24a^3b^2$
256. $6x^2y^3$
257. $30mn$
258. $12x^2y^2$
259. $8a^3b^2$
260. $20p^5q^2$
261. $30k^4m^3$
- Page 110
262. x
263. $\frac{a}{6}$
264. 12
265. $\frac{1}{3}$
266. $\frac{y}{7}$
267. $\frac{8x}{3y}$
268. $\frac{3}{2b}$
269. $\frac{5a}{2}$
270. $\frac{x}{5}$
271. x^4
272. $\frac{2m^2}{3}$
273. $\frac{4m}{5n}$
274. $\frac{1}{4x}$
275. $\frac{1}{2x^2}$
276. p^3q^2
277. $\frac{1}{ab^2}$
278. $\frac{3}{4g}$
279. $\frac{1}{2b^2}$

Topic 3 Measurement

Page 113

1. 150 mm
2. 9000 mm
3. 0.07 m
4. 1.2 cm
5. 5200 m
6. 360 cm
7. 192 mm
8. 8000 m
9. 1 240 000 cm
10. 0.0018 km
11. 0.0112 m
12. 0.000 145 km
13. 0.0584 km
14. 247 mm
15. 80 000 cm
16. 0.0145 km
17. 192.5 mm
18. 0.203 km
19. 0.485 km
20. 16 400 cm
21. 0.250 58 km
22. 0.165 km

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23. 3.5 ha
24. 92 000 cm²
25. 7.5 cm²
26. 450 mm²
27. 23 500 m²
28. 0.12 ha
29. 7500 cm²
30. 25 000 mm²
31. 65.4 m²
32. 0.0128 m²

Page 115

33. 158 cm
34. 170 mm
35. 8000 cm
36. 0.5 ha
37. 95 cm
38. 72 000 km
39. 2450 km
40. 0.075 ha
41. 63 000 cm²
42. 14.4 m²
43. 137 cm

Page 115 cont...

44. 96 m²
45. 512.5 mm
46. 0.5125 m
47. 900 cm²
48. 0.09 m²
49. 25.6 m
50. 2 850 000 cm²

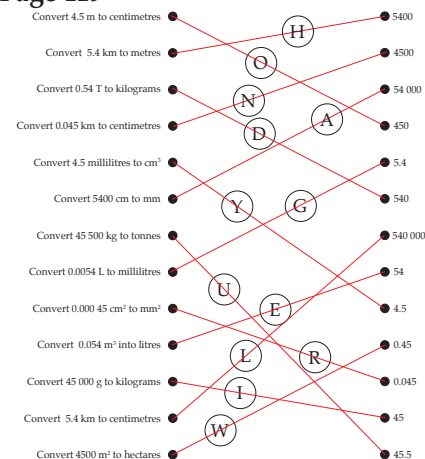
Page 117

51. 0.0365 g
52. 14 700 000 mg
53. 2.5 ml
54. 45 200 ml
55. 4.5 kg
56. 175 g
57. 250 g
58. 0.865 T
59. 540 kg
60. 600 mg

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61. 0.0182 T
62. 1800 cm³
63. 6450 L
64. 720 kg
65. 0.35 L
66. 6.75 kg
67. 0.78 m³
68. 4.2 m³
69. 0.95 g
70. 350 mg
71. \$1999
72. 32 bags
73. 45 300 L
74. 1250 bottles
75. 6.75 kg
76. 500 teaspoons
77. 0.275 L
78. 2.16 T

Page 119



What did the tie say to the hat?

YOU GO AHEAD AND I'LL HANG AROUND A WHILE.

Page 121

79. 30° C
80. 44° C
81. 7° C
82. 63° C
83. A = 125
B = 600
84. C = 450
D = 25
85. E = 575
F = 350
86. A = 20
B = 68
C = 88
D = 148
87. A = 3
B = 48
C = 87
D = 102
88. A = 5
B = 90
89. A = 25
B = 52.5

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90. A = 30 mm
B = 65 mm
91. C = 12 mm
D = 98 mm
92. E = 50° or 310°
F = 135° or 225°
93. G = 38° or 322°
H = 149° or 211°

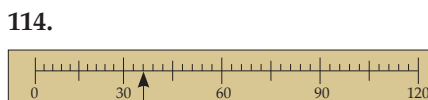
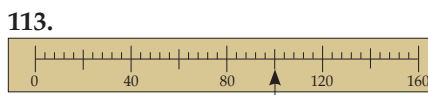
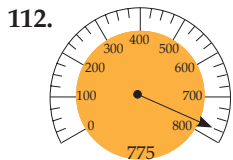
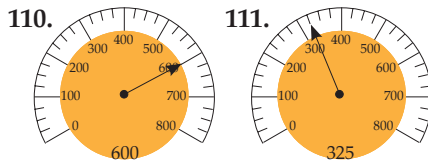
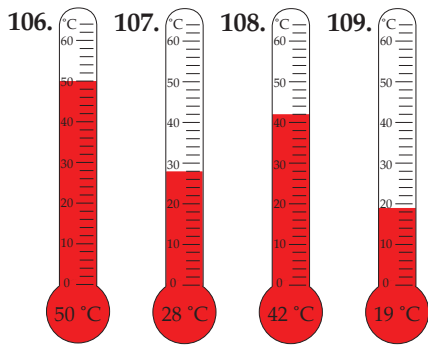
Page 122 cont...

- 94. I = 10 psi
J = 55 psi
- 95. K = 85 psi
L = 145 psi
- 96. M = 17 volts
- 97. N = 65 hertz
P = 46 hertz

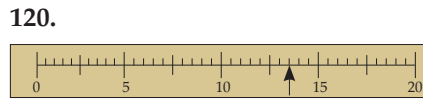
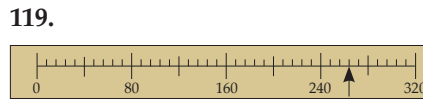
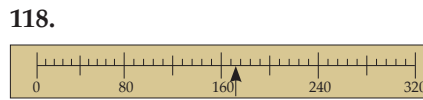
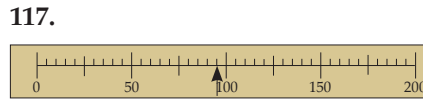
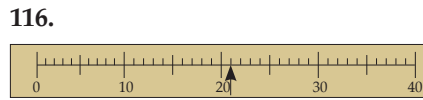
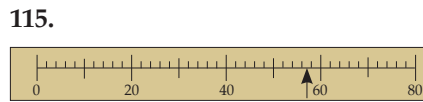
Page 123

- 98. Q = 63.5 hertz
R = 52.5 hertz
- 99. S = 25 A
T = 13 A
- 100. U = 1 vu
V = -6 vu
- 101. W = 32 A
X = 46 A
- 102. Y = 360 amperes
Z = 50 amperes
- 103. A = 2700 rpm
B = 400 rpm
- 104. C = 200 ml
D = 475 ml
- 105. E = 2.5 vu
F = -15 vu

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Page 124 cont...



Page 126

- 121. Perimeter = 36 units
- 122. Perimeter = 42 units
- 123. Perimeter = 42 units
- 124. Perimeter = 46 units
- 125. Perimeter = 58 units
- 126. Perimeter = 66 units

Page 127

- 127. Perimeter = 38 units
- 128. Perimeter = 28 units
- 129. Perimeter = 42 units
- 130. Perimeter = 46 units
- 131. Perimeter = 38 units
- 132. Perimeter = 84 units

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- 133. Perimeter = 23.2 m
- 134. Perimeter = 19 cm
- 135. Perimeter = 46.5 cm
- 136. Perimeter = 46.2 m

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- 137. Perimeter = 47.4 cm
- 138. Perimeter = 35 m
- 139. Perimeter = 40.6 m
- 140. Perimeter = 72 cm
- 141. Perimeter = 186.6 mm
- 142. Perimeter = 95.2 cm
- 143. Perimeter = 120.2 cm
- 144. Perimeter = 17.9 m

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- 145. Perimeter = 102 cm
- 146. Each side = 36 cm
- 147. Perimeter = 58 m
- 148. Perimeter = 85 cm
- 149. Perimeter = 76 cm
- 150. Square = 9 cm
Triangle = 12 cm
- 151. Lengths = 25 cm, 25 cm, 10 cm
- 152. Length = 50 m
Width = 25 m, Perim. = 150 m
- 153. Length = 11 cm
Width = 8 cm
- 154. Length = 18 m
Width = 9 m

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- 155. Circum. = 20.4 cm (3 sf)
- 156. Circum. = 29.1 m (3 sf)
- 157. Circum. = 42.1 cm (3 sf)
- 158. Circum. = 76.0 mm (3 sf)
- 159. Circum. = 58.6 cm (3 sf)
- 160. Circum. = 26.7 m (3 sf)
- 161. Circum. = 151 m (3 sf)
- 162. Circum. = 55.6 m (3 sf)
- 163. Perimeter = 20.2 m (3 sf)

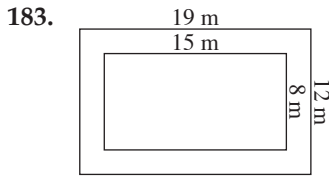
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- 164. Perimeter = 8.23 cm (3 sf)
- 165. Perimeter = 8.57 m (3 sf)
- 166. Perimeter = 52.4 m (3 sf)
- 167. Perimeter = 691 m (3 sf)
- 168. Circum. = 21.4 m (3 sf)
- 169. 449 or 450 times
- 170. Beading = 6.04 m (3 sf)
- 171. Circum. = 54.3 m (3 sf)
- 172. Rotate 11 times
- 173. Diameter = 2.69 m (3 sf)

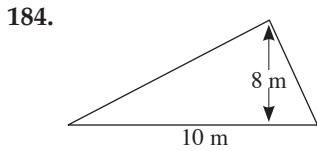
Page 135

- 174. Area = 84.6 cm² (3 sf)
- 175. Area = 81.2 m² (3 sf)
- 176. Area = 71.4 mm² (3 sf)
- 177. Area = 63.9 m² (3 sf)
- 178. Area = 40.8 cm² (3 sf)
- 179. Area = 17.0 cm² (3 sf)
- 180. Area = 36.6 m² (3 sf)
- 181. Area = 27.4 cm² (3 sf)
- 182. Area = 40.5 m² (3 sf)

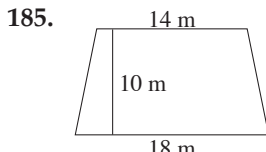
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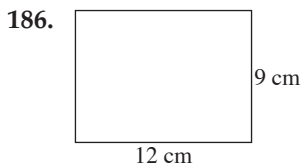
Area = 228 m²



Base Length = 10 m

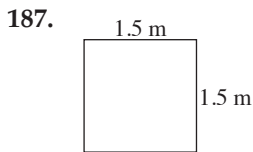


Width = 10 m



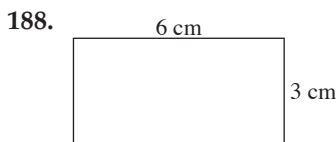
Length = 12 cm

Width = 9 cm

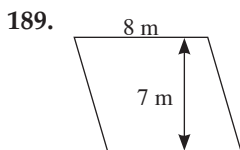


Length = 1.5 m

Width = 1.5 m

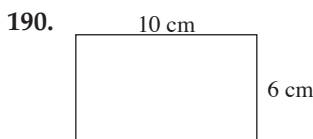


Area and perimeter = 18 cm



Base = 8 m

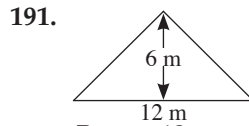
Height = 7 m



Length = 10 cm

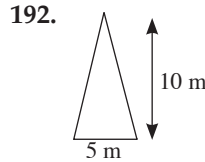
Width = 6 cm

Page 136 cont...



Base = 12 m

Height = 6 m



Base = 5 m

Height = 10 m

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193. Area = 191 cm² (3 sf)

194. Area = 37.4 m² (3 sf)

195. Area = 784 m² (3 sf)

196. Area = 77.0 cm² (3 sf)

197. Area = 54.8 cm² (3 sf)

198. Area = 17.6 m² (3 sf)

199. Area = 216 cm² (3 sf)

200. Area = 275 mm² (3 sf)

201. Area = 5.91 m² (3 sf)

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202. Area = 85 m² (2 sf)

203. Area = 180 m² (2 sf)

204. Area = 6.2 m² (2 sf)

205. Area = 57 m² (2 sf)

206. Area = 263 m² (3 sf)

207. Area = 9.6 m² (2 sf)

208. Area = 19.6 m² (3 sf)

209. Area = 85.1 m² (3 sf)

210. r = 2 cm, area = 12.6 cm²

r = 4 cm, area = 50.3 cm²

r = 3 cm, area = 28.3 cm²

r = 6 cm, area = 113 cm²

When the radius doubles area increases by a factor of 4.

211. When the radius is halved the area decreases by a factor of $\frac{1}{4}$ (0.25).

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212. Area = (1.70 x 5.30) + (6.90 x 2.80)
= 28.3 cm² (3 sf)

213. Area = (4.20 x 10.4) + ($\frac{1}{2}$ x 4.20 x 3.50)
= 51.0 m² (3 sf)

Page 141 cont...

214. Area = (5.80 x 6.20) + (π x 2.90 x 2.90 ÷ 2)
= 49.2 cm² (3 sf)

215. Area = (4.5 x 3.2) + (π x 3.2 x 3.2 ÷ 4)
= 22.4 m² (3 sf)

216. Area = (11.5 x 8.60) - (4.50 x 4.50)
= 78.7 cm² (3 sf)

217. Area = (π x 7.30 x 7.30) - (π x 2.60 x 2.60)
= 146 m² (3 sf)

218. Area = ($\frac{1}{2}$ x 9.20 x 5.6) - ($\frac{1}{2}$ x 4.30 x 2.60)
= 20.2 cm² (3 sf)

219. Area = ($\frac{4.20 + 8.80}{2}$ x 5.10) - (1.40 x 6.90)
= 23.5 m² (3 sf)

Page 143

220. Vol. = 12 cm³

221. Vol. = 39 cm³

222. Vol. = 13 cm³

223. Vol. = 17 cm³

224. Vol. = 15 cm³

225. Vol. = 108 cm³

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226. Vol. = 5.94 m³

227. Vol. = 2210 cm³

228. Vol. = 1700 mm³

229. Vol. = 194 cm³

230. Vol. = 308 m³

231. Vol. = 2.74 m³

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232. Vol. large = 30 000 cm³

Vol. small = 250 cm³

120 small cubes will fit in the large cube.

233. Vol. block = 80 cm³

Vol. structure = 5 x 80 cm³
= 400 cm³

234. Vol. = 800 cm³

235. 1200 chocolate bars

236. Vol. = 6000 cm³

water = 6 litres

237. Capacity = 2520 litres

238. Cube with sides 2 cm has volume = 8 cm³. Cube with sides 4 cm has volume 64 cm³. Volume has increased by a factor of 8.

Page 145 cont...

239. Volume will be decreased
by a scale factor of $\frac{1}{8}$.

Page 147

240. 0335 hours
241. 1415 hours
242. 0015 hours
243. 2320 hours
244. 0000 hours or 2400 hours
245. 2155 hours
246. 1650 hours
247. 0720 hours
248. 0825 hours
249. 0434 hours
250. 1305 hours
251. 2245 hours
252. 3:20 pm
253. 9:54 am
254. 11:45 pm
255. 8:55 am
256. 10:45 pm
257. 11:15 am
258. 12:40 am
259. 2:45 am
260. 9:05 pm
261. 1:58 am
262. 3:58 pm
263. 4:57 am
264. 6:10 am
0610 hours
265. 9.55 pm
2155 hours
266. 1:45 am
0145 hours
267. 8:25 pm
2025 hours
268. 3:10 am
0310 hours
269. 7:30 pm
1930 hours
270. 12:30 am
0030 hours
271. 3:50 pm
1550 hours
272. 2:25 am
0225 hours

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273. 1 hour 45 minutes
274. 1 hour 50 minutes
275. 9:25 pm
276. 1955 hours
277. 12 hours 40 minutes
278. 5:05 pm

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279. 47 hours
280. 8:40 am
281. 6:28 pm
282. 40 hours 50 minutes
283. 8 hours 50 minutes
284. 1900 hours
285. 3:45 pm
286. 9 hours 20 minutes
287. 3 hours 43 minutes
288. 2 hours 45 minutes
289. 5 hours 15 minutes
290. 11:22 pm

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291. a) \$32
b) \$16
c) 5:20 am
d) 14
e) 6
f) 1 hour
g) Has to leave at 10:00 am because the 11:00 am sailing goes via Devonport and would take 50 minutes so he would be late for lunch.

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292. a) 50 minutes
b) Saab 340
c) 4
d) Depart 2:40 pm
Arrive 3:30 pm
e) 15 flights
f) $\frac{46}{70} = 0.6571$ (4 dp)
g) 4
h) 9 hours 30 minutes
i) 3 flights
j) GZ617 – 1 hour in duration

Page 153

293. a) 8:30 pm
b) 55 minutes
c) 3 times,
0055, 0535, 1600 hours

Page 153 Q293 cont...

- d) 2 hours 30 minutes
e) 0135 hours
f) 1 hour 20 minutes
294. a) 8:10 am
b) 55 minutes
c) 1 hour 5 minutes
d) 3 periods
e) 8 hours 35 minutes
f) 1 hour 40 minutes

Page 154

295. a) June 2010
b) 4 hours 30 minutes
c) 6:45 am
d) 45 minutes
e) Wednesday and Saturday
f) Because of traffic and road works.
g) 10:00 pm on Tuesday
h) 55 minutes
i) 4 hours 30 minutes
j) Monday, Wednesday, Thursday, Saturday and Sunday
k) Hop-on Hop-off South Africa door to door
l) 10 hours 30 minutes

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296. a) Artichoke whole, beetroot and cabbage.
b) Cauliflower florets
c) 10 to 20 minutes
d) Blanch
e) 2 to 3 minutes
f) Artichoke and lima beans
g) Bake for 60 mins at 175° C
h) Beetroot
i) 16 to 20 minutes
j) Broccoli, cauliflower, artichoke hearts, asparagus, beans, carrots, cabbage, and brussel sprouts

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297. a) \$4.95
b) \$14.45
c) \$16.90
d) 5 pizzas
e) Super Supreme, it is the cheapest.

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- f) 3 family Super Supremes pizzas, 2 french fries, 2 herb breads and delivered
- g) \$3 saving

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298. a) 435 books
- b) Saturday – most people off work so can shop. People looking for a leisure activity on a Saturday.
 - c) Romance
 - d) Monday – beginning of the week, people back at work.
 - e) 72.5 books a day
 - f) Horror
 - g) 13 Science Fiction books per day.
 - h) Romance, yes it is. 36 romance books up to Wednesday and 45 in the last 3 days of the week giving a total of 81 for the week.

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299. a) The next business day.
- b) \$7.75
 - c) $\$6.75 + \$1.50 = \$8.25$
 - d) 324×458 mm, Weight < 500 g, Thickness < 20 mm, cost \$11.75
 - e) \$5.25
 - f) \$5.75. Send it Wednesday.
 - g) DLE \$5.50, C6 \$7.25, C5 \$9.00, C4 \$10.25 and C3 \$11.50.
 - h) C2 charges \$5.75, \$7.50, \$9.25, \$11.00.

Topic 4

Shape

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1. $\angle RTQ$. Obtuse – greater than 90° and less than 180° .
2. $\angle DGK$. Right angle – equal to 90° .
3. $\angle JWS$. Acute – between 0° and 90° .
4. $\angle BAC$. Straight angle – equal to 180° .
5. $\angle PAF$. Reflex – greater than 180° and less than 360° .
6. $\angle TMZ$. Obtuse – greater than 90° and less than 180° .

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7. $\angle ABC = 65^\circ$
8. $\angle DEF = 155^\circ$
9. $\angle GHI = 64^\circ$
10. $\angle JKL = 177^\circ$
11. $\angle MNO = 92^\circ$
12. $\angle PQR = 128^\circ$
13. $\angle ABC = 55^\circ$
14. $\angle DEF = 15^\circ$

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15. $\angle GHI = 165^\circ$
16. $\angle JKL = 140^\circ$
17. $\angle MNO = 74^\circ$
18. $\angle PQR = 235^\circ$
19. $\angle STU = 92^\circ$
 $\angle UTV = 50^\circ$
20. $\angle WXY = 92^\circ$
 $\angle YXZ = 72^\circ$
21. $\angle ABC = 22^\circ$
 $\angle ABD = 100^\circ$
22. $\angle HEF = 121^\circ$
 $\angle FEG = 31^\circ$

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23. $a = 142^\circ$
24. $b = 114^\circ$
25. $c = 42^\circ$
26. $d = 38^\circ$
27. $e = 12^\circ$
28. $f = 58^\circ$
29. $g = 18^\circ$
30. $h = 15^\circ$

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31. $i = 134^\circ$
32. $j = 61^\circ$
33. $k = 108^\circ$
34. $m = 324^\circ$

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35. $n = 66^\circ$
36. $p = 72^\circ$
37. $q = 31^\circ$
38. $r = 97^\circ$

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39. $s = 127^\circ$
 $t = 53^\circ$
40. $u = 94^\circ$
 $v = 86^\circ$
41. $w = 157^\circ$
 $x = 23^\circ$
 $y = 23^\circ$
42. $z = 75^\circ$
 $a = 105^\circ$
 $b = 105^\circ$
43. $c = 74^\circ$
44. $d = 19^\circ$
 $e = 85^\circ$
45. $f = 37^\circ$
 $g = 143^\circ$
46. $h = 28^\circ$
 $i = 152^\circ$
 $j = 152^\circ$

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47. $m = 90^\circ$
Adj. \angle s on a str. line = 180° .
48. $n = 52^\circ$
Adj. \angle s on a str. line = 180° .
 $o = 46^\circ$
Adj. \angle s on a str. line = 180° .
49. $p = 120^\circ$
 \angle s at a point = 360° .
50. $q = 18^\circ$
Adj. \angle s on a str. line = 180° .
51. $r = 29^\circ$
Vert. opposite \angle s are equal.
 $s = 151^\circ$
Adj. \angle s on a str. line = 180° .
52. $t = 27^\circ$
Adj. \angle s on a str. line = 180° .
 $u = 27^\circ$
Vert. opposite \angle s are equal.
53. $v = 36^\circ$
Vert. opposite \angle s are equal.
 $w = 43^\circ$
Vert. opposite \angle s are equal.
 $x = 101^\circ$
Adj. \angle s on a str. line = 180° .

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54. $a = 87^\circ$
55. $b = 28^\circ$
56. $c = 29^\circ$
 $d = 151^\circ$
57. $e = 103^\circ$
 $f = 147^\circ$
 $g = 77^\circ$
58. $h = 58^\circ$
 $i = 152^\circ$
 $j = 86^\circ$
 $k = 122^\circ$
59. $m = 63^\circ$
 $n = 63^\circ$
 $p = 117^\circ$
60. $q = 37^\circ$
 $r = 59^\circ$
 $s = 143^\circ$
61. $t = 39^\circ$

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62. $a = 141^\circ$
63. $b = 117^\circ$

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64. $c = 65^\circ$
65. $d = 29^\circ$
66. $c = 83^\circ$
 $d = 97^\circ$
67. $e = 66^\circ$
 $f = 126^\circ$
68. $g = 98^\circ$
 $h = 134^\circ$
69. $i = 89^\circ$
 $j = 146^\circ$
70. $k = 93^\circ$
 $l = 93^\circ$
71. $m = 56^\circ$
 $n = 37^\circ$

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72. $a = 137^\circ$
 $b = 43^\circ$
73. $c = 64^\circ$
 $d = 116^\circ$
74. $e = 93^\circ$
 $f = 93^\circ$
75. $g = 39^\circ$
 $h = 141^\circ$
76. $m = 111^\circ$
 $n = 111^\circ$
 $p = 69^\circ$

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77. $q = 63^\circ$
 $r = 63^\circ$
 $s = 63^\circ$

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78. $t = 82^\circ$
 $u = 98^\circ$
 $v = 98^\circ$
79. $w = 106^\circ$
 $x = 74^\circ$
 $y = 106^\circ$
80. $z = 54^\circ$
 $a = 126^\circ$
 $b = 126^\circ$

81. $c = 109^\circ$
 $d = 115^\circ$
 $e = 44^\circ$

82. $g = 51^\circ$
 Co-interior \angle s sum to 180° ,
 parallel lines

83. $h = 133^\circ$
 Adj. \angle s on a str. line = 180° .
 $i = 47^\circ$

- Corresponding \angle s are
 equal, parallel lines

84. $k = 47^\circ$
 Int. \angle s of $\triangle a$ sum to 180° .
 $m = 47^\circ$
 Alt. \angle s are =, parallel lines.
 $n = 59^\circ$
 Adj. \angle s on a str. line = 180° .

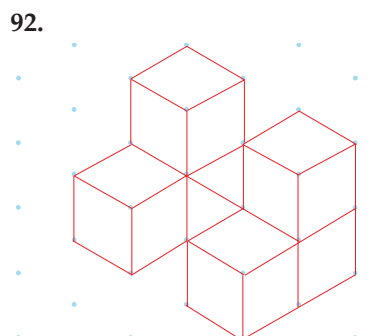
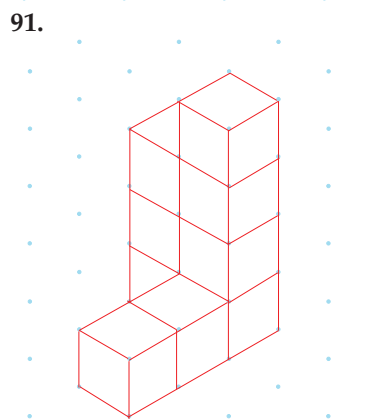
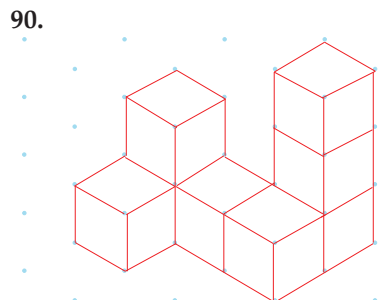
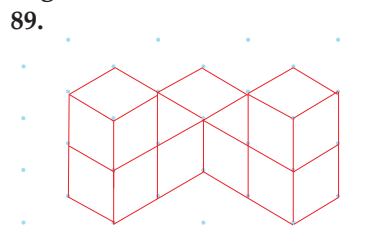
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85. $a = 54^\circ$
 Alt. \angle s are =, parallel lines.
 $b = 100^\circ$
 Adj. \angle s on a str. line = 180° .
 $c = 26^\circ$
 Int. \angle s of $\triangle a$ sum to 180° .
86. $d = 104^\circ$
 Vert. opp \angle s are equal.
 $e = 76^\circ$
 Adj. \angle s on a str. line = 180° .
 $f = 66^\circ$
 Int. \angle s of $\triangle a$ sum to 180° .

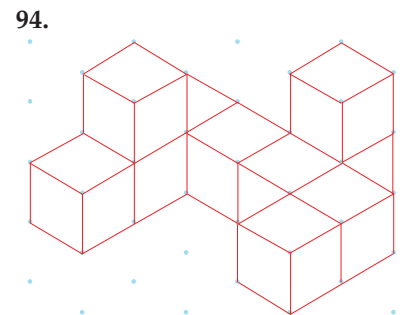
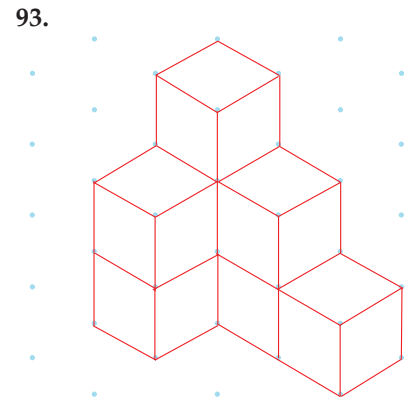
Page 178 cont...

87. $g = 117^\circ$
 Co-int. \angle s sum to 180° ,
 // lines.
 $h = 63^\circ$
 Corres. \angle s are equal, // lines.
 $i = 90^\circ$
 Int. \angle s of a quad. = 360° .
88. $k = 92^\circ$
 Adj. \angle s on a str. line = 180° .
 $m = 106^\circ$
 Int. \angle s of a quad. sum to 360° .
 $n = 146^\circ$
 \angle s at a point sum to 360° .

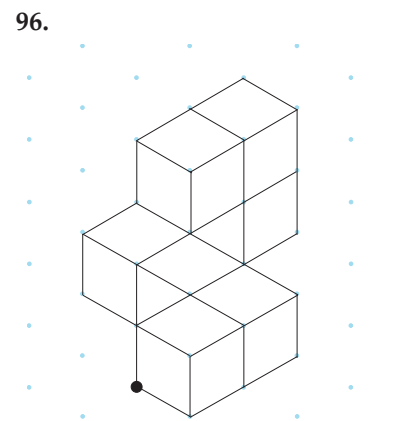
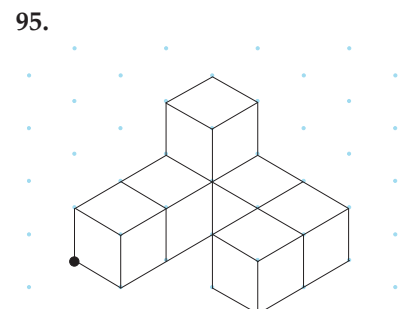
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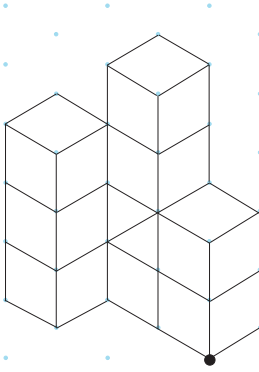


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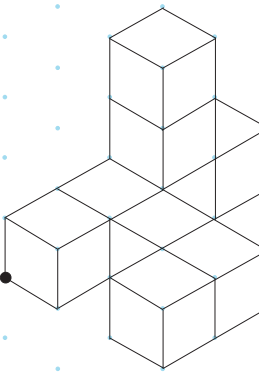


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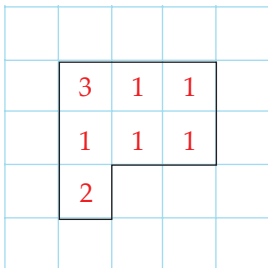


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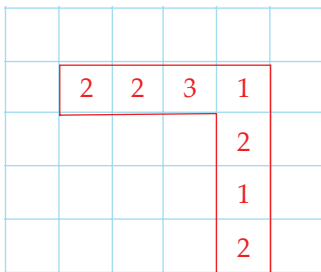


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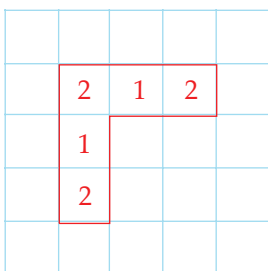
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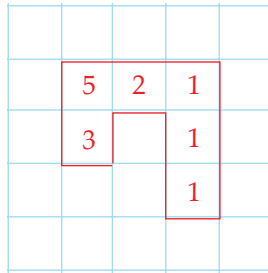


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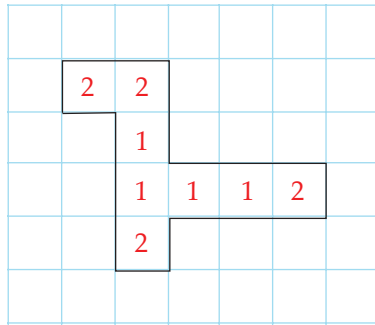


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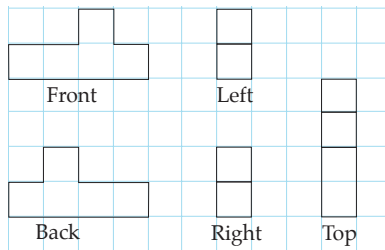


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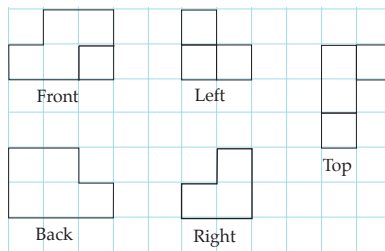


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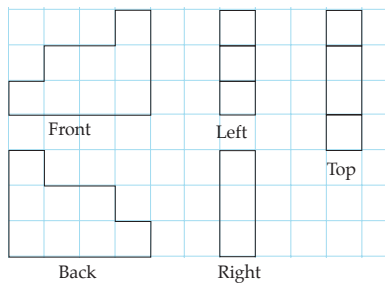
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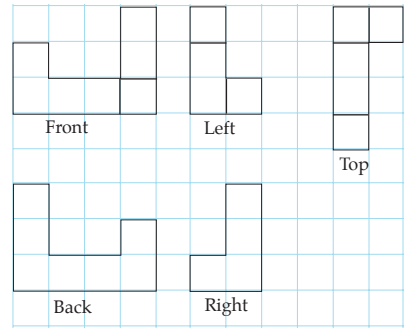


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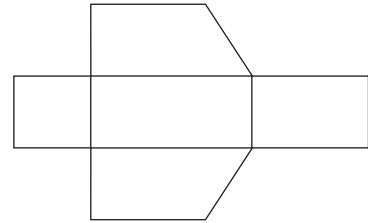
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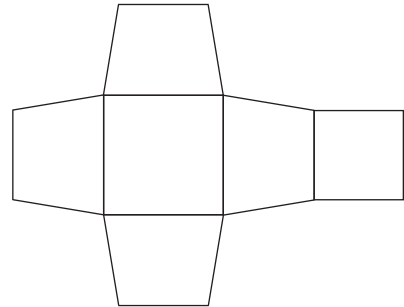


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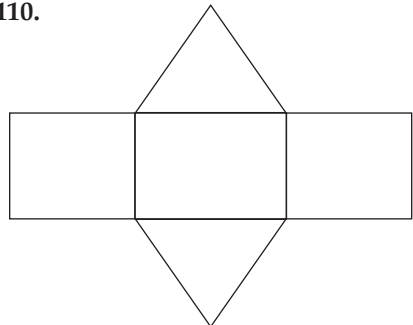
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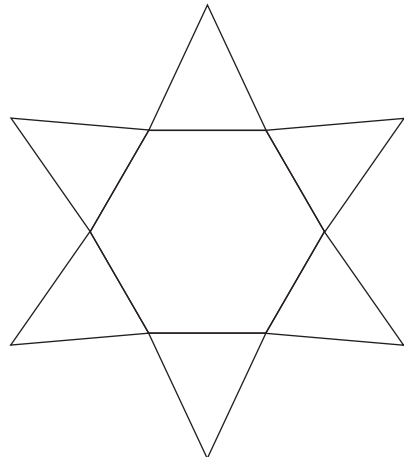
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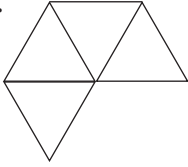


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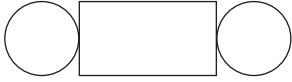


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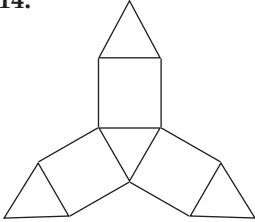
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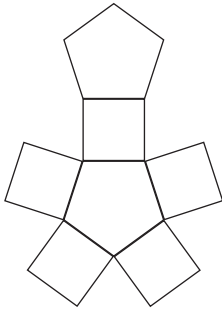
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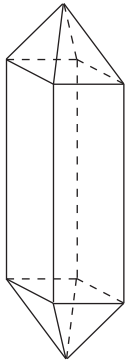


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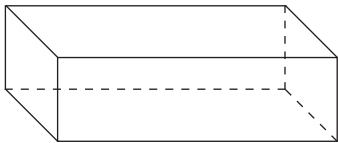


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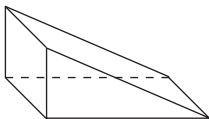
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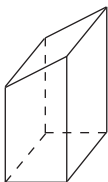
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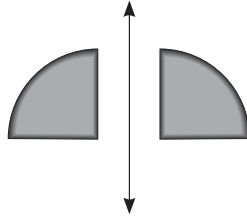


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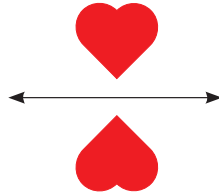


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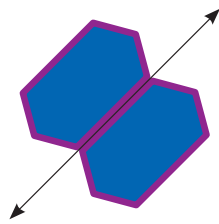
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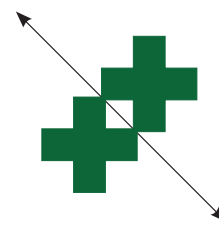
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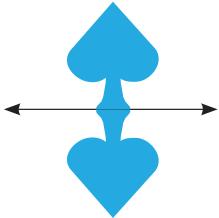
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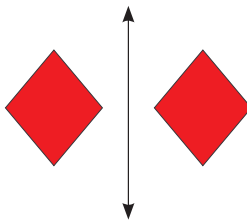
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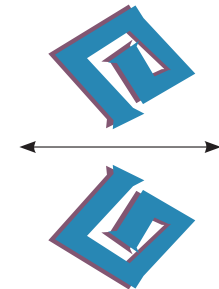
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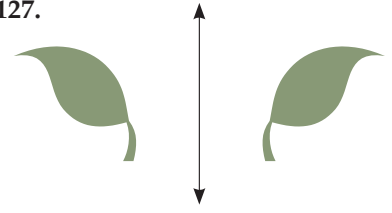


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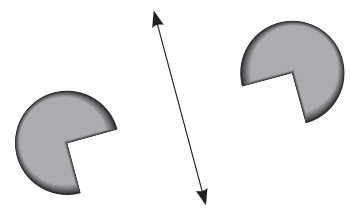


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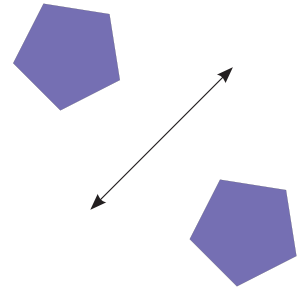
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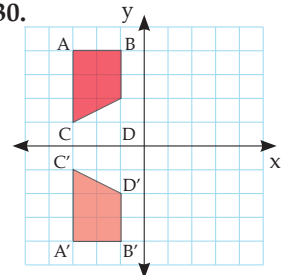


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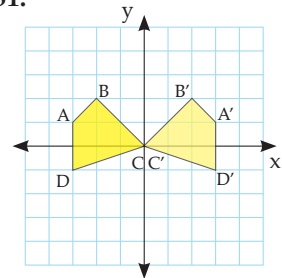


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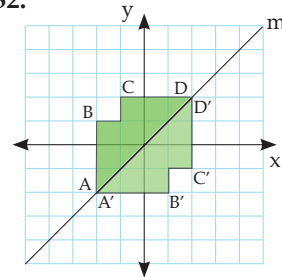
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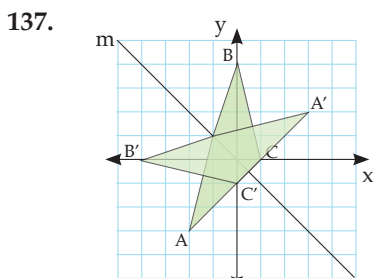
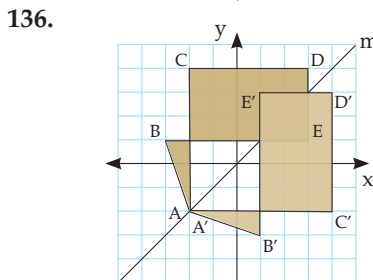
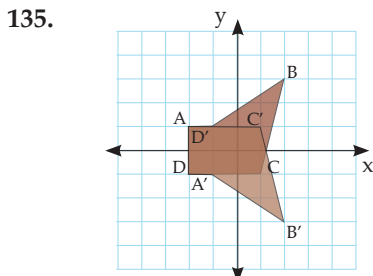
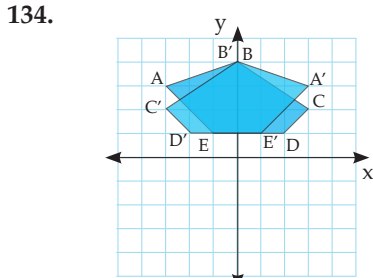
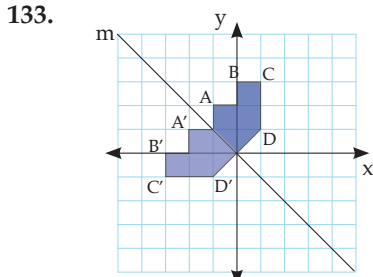
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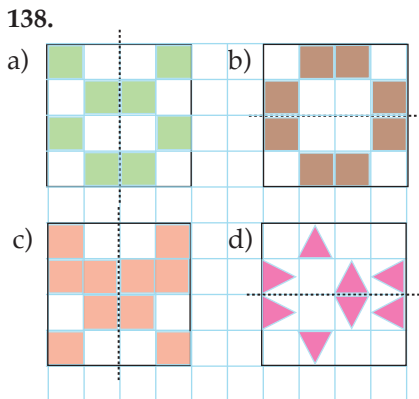
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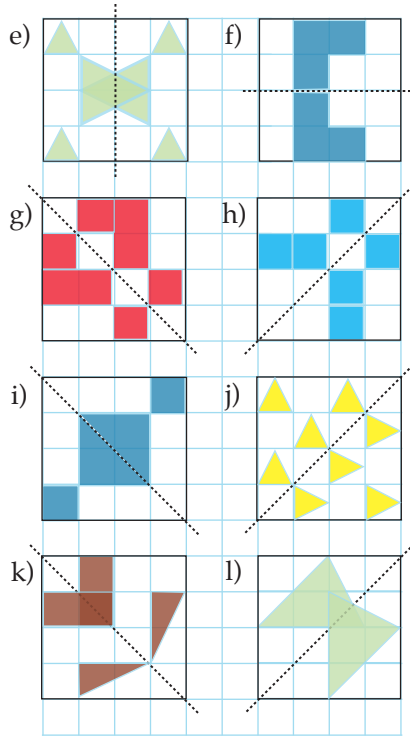
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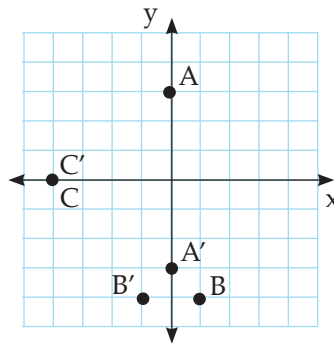
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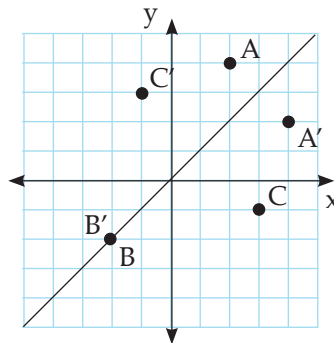


139. a), b) and c)



d) C

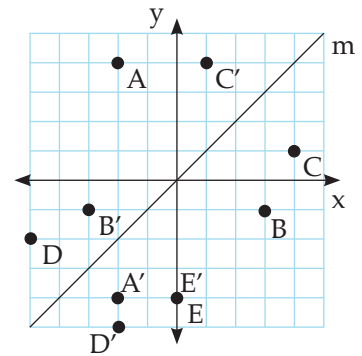
140. a), b) and c)



d) B

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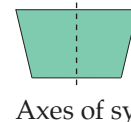
141. a), b) c), d) and e)



f) E, because it is on the mirror line.

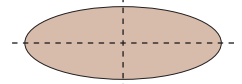
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142.



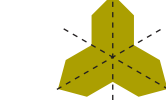
Axes of sym. = 1

143.



Axes of sym. = 2

144.



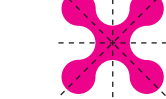
Axes of sym. = 3

145.



Axes of sym. = 1

146.



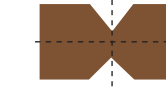
Axes of sym. = 4

147.



Axes of sym. = 1

148.



Axes of sym. = 2

149.



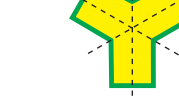
Axes of sym. = 1

150.



Axes of sym. = 5

151.



Axes of sym. = 3

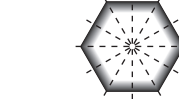
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152.



Axes of sym. = 1

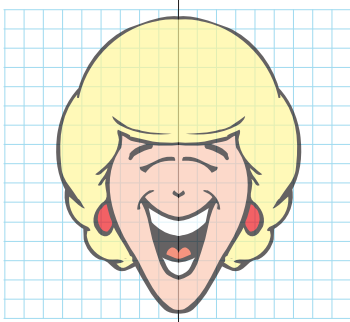
153.



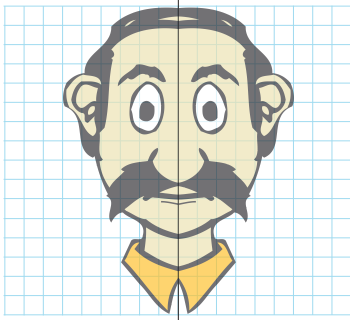
Axes of sym. = 6

Page 197 cont...

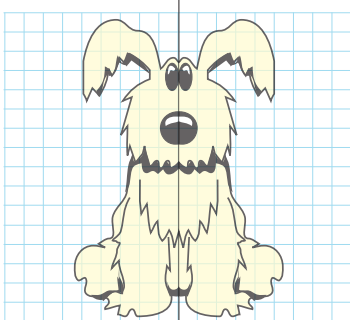
154.



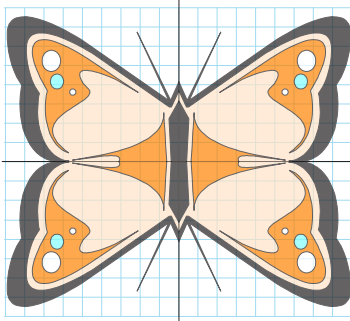
155.



156.

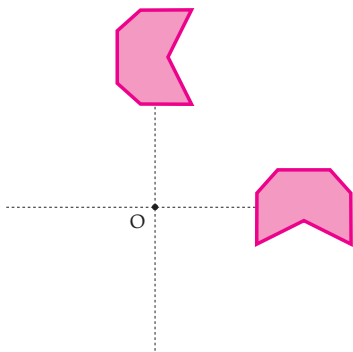


157.



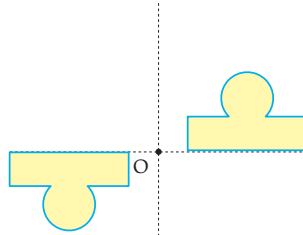
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158.

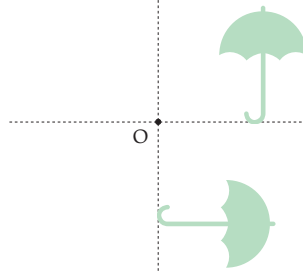


Page 200 cont...

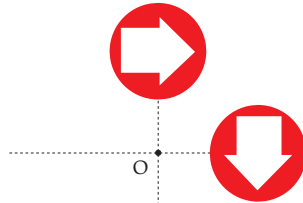
159.



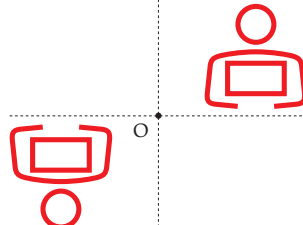
160.



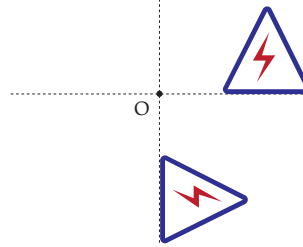
161.



162.

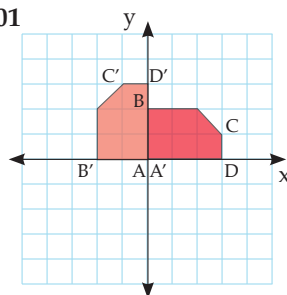


163.



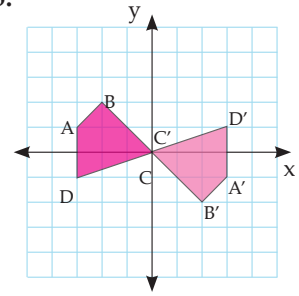
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164.

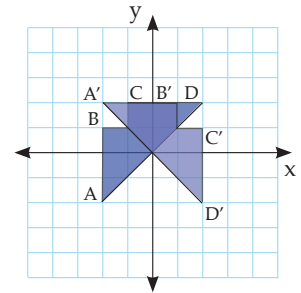


Page 201 cont...

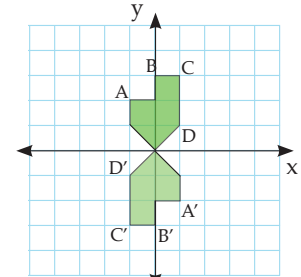
165.



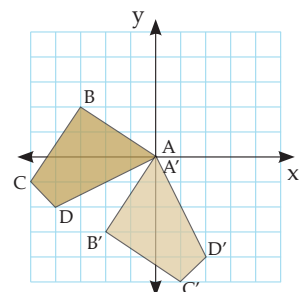
166.



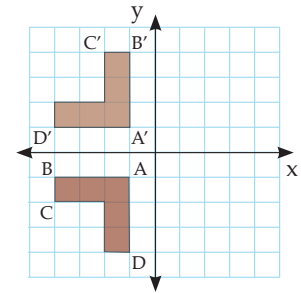
167.



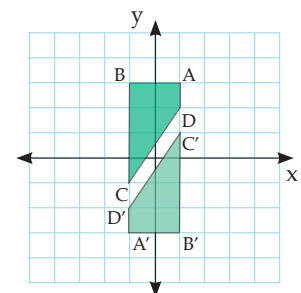
168.



169.

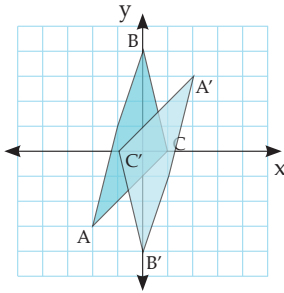


170.



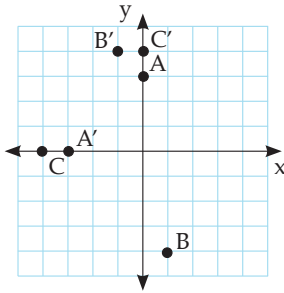
Page 201 cont...

171.

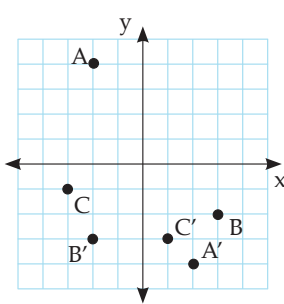


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172.



173.



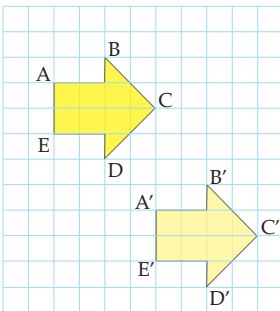
- 174. Rotation 180° about O.
- 175. Rotation 270° about O.
- 176. Rotation 90° about O.
- 177. Rotation 270° about O.

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- 178. 2
- 179. 3
- 180. 4
- 181. 8
- 182. 8
- 183. 5
- 184. 1
- 185. 2

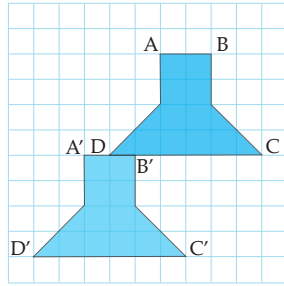
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186.

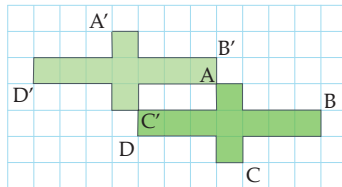


Page 207 cont...

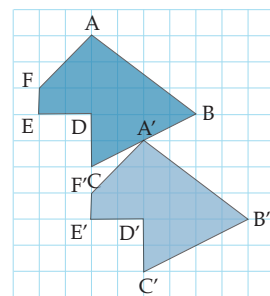
187.



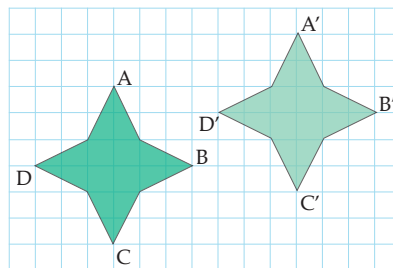
188.



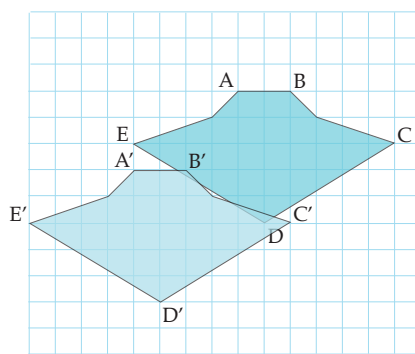
189.



190.

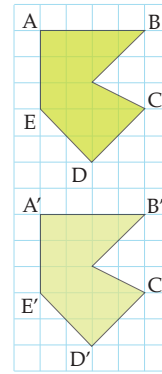


191.

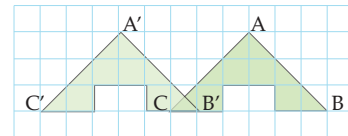


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192.



193.



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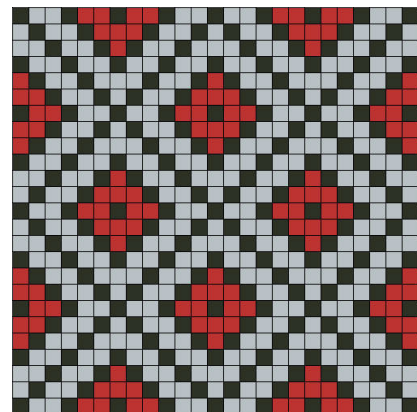
- 194. Translate 5 units to the right and 1 unit down.
- 195. Translate 8 units to the right and 3 units up.
- 196. Translate 2 units to the left and 4 units down.
- 197. Translate 7 units to the left and 1 unit up.
- 198. Translate 7 units to the right.
- 199. Translate 3 units up
- 200. Translate 4 units to the right and 3 units down.
- 201. Translate 4 units to the left and 2 units up.

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What did the beach say when the tide came in?

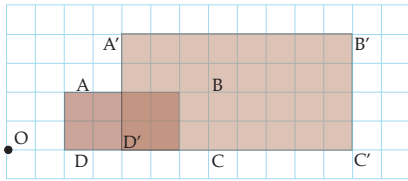
LONG TIME NO SEA

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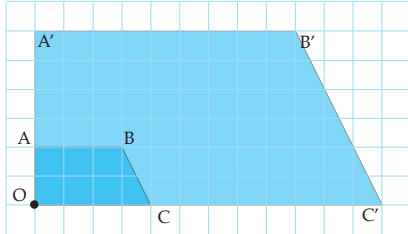


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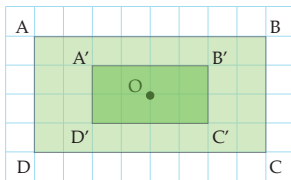
202.



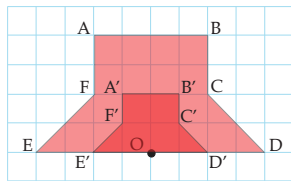
203.



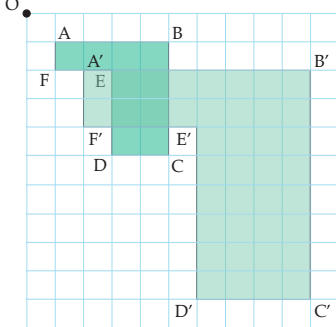
204.



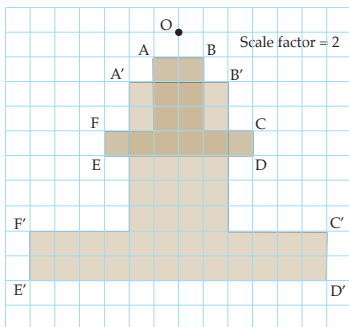
205.



206.

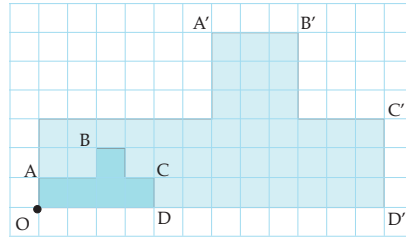


207.

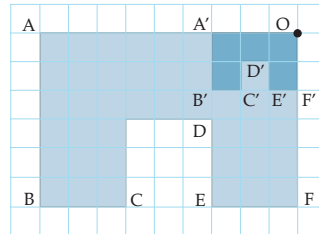


Page 213 cont...

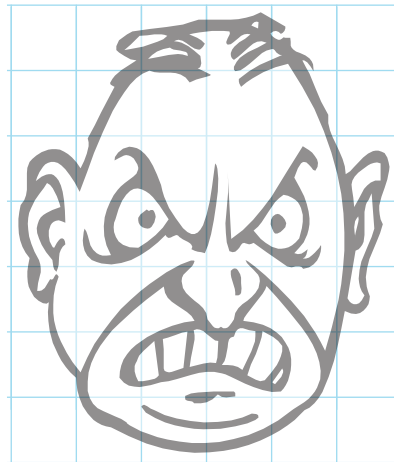
208.



209.

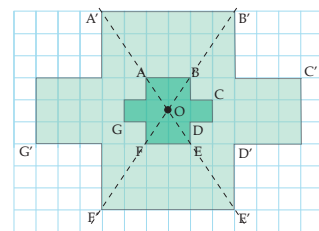


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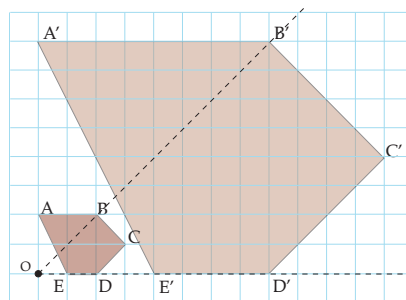
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210.



Enlargement, scale factor 3, centre O.

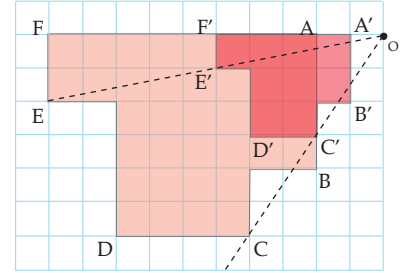
211.



Enlargement, scale factor 4, centre O.

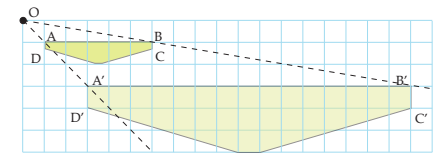
Page 215 cont...

212.



Enlargement, scale factor 0.5, centre O.

213.



Enlargement, scale factor 3, centre O.

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214. a) Palm tree
 b) Treasure chest
 c) D3
 d) B5
 e) 30 to 32 km
 f) 50 km
215. a) 9133
 b) Perth
 c) 8043
 d) Cairns
 e) 1850 km
 f) 3100 km

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216. 02400120
 217. 08400810
 218. Wanganui
 219. New Plymouth
 220. Kaitia
 221. Christchurch
 222. 03600540
 223. 04200210
 224. 440 km
 225. 592 km
 226. Wellington
 227. Kaitia
 228. Approx. 3.5 hours
 229. Approx. 7 hours
 230. SE, 430 km
 231. SW, 250 km

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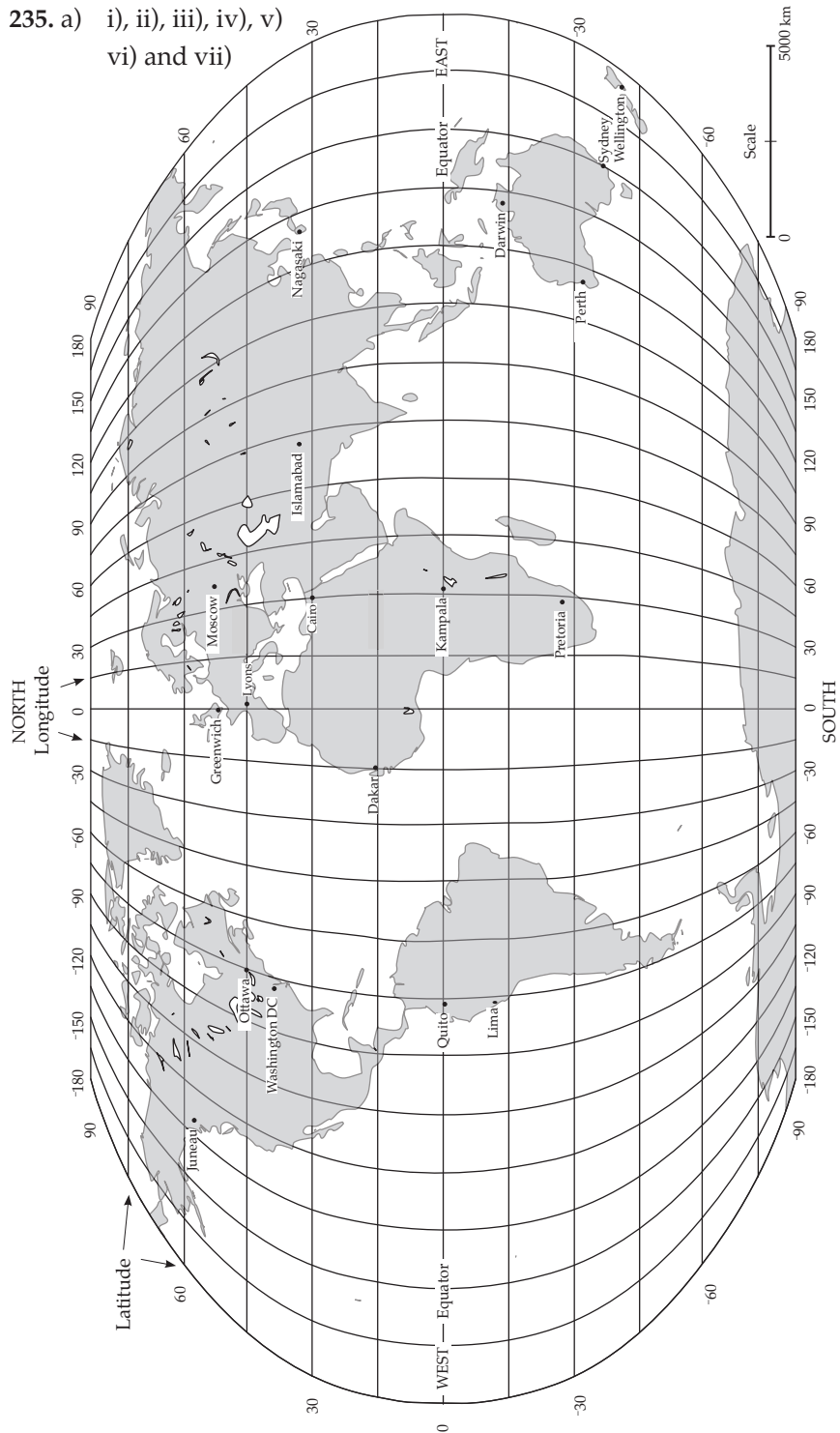
232. a) NW, 315°
 b) S, 180°
 c) E, 090°
 d) NE, 045°
 e) W, 270°
 f) SW, 225°
 g) N, 000°
 h) E, 090°
 i) SE, 135°
233. a) 070°
 b) 300°
 c) 230°
 d) 165°
 e) 290°
 f) 215°
 g) 245°
 h) 280°
 i) 075°
 j) 190°
 k) 350°
234. a) N 80° E
 b) S 60° E
 c) S 20° W
 d) S 60° W
 e) N 40° W
 f) S 65° W
 g) S 45° E
 h) N 75° W

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235. b) i) Lat. 40° S Long. 174° E
 ii) Lat. 33° N Long. 73° E.
 iii) Lat. 55° N Long. 37° E.
 iv) Lat. 45° N Long. 75° W.
 v) Lat. 12° S Long. 77° W.
 vi) Lat. 25° S Long. 28° E.
 vii) Lat. 12° S Long. 130° E.
- c) i) Approx. 8300 km
 ii) Approx. 12 600 km
 iii) Approx. 6000 km
 iv) Approx. 6400 km
 v) Approx. 4300 km
- d) Greenwich Lat. 51° N
 Long. 0° E.
 Quito Lat. 0° S Long. 78° W.
 Kampala Lat. 0° N
 Long. 32° E

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235. a) i), ii), iii), iv), v)
 vi) and vii)



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236. a) Isosceles triangle
 b) Irregular pentagon
 c) Trapezium
 d) Square based pyramid
 e) Pentagonal prism
 f) Pentagonal based pyramid
 g) Hexagonal prism
 h) Regular octagon
 i) Cuboid

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236. j) Cylinder
 k) Cone
 l) Irregular hexagon
 m) Parallelogram

Topic 5
Statistics

Page 233

1. Mean = 3.1
Median = 3
Mode = 3
2. Mean = 16.5
Median = 12.5
Mode = 10
3. Mean = 42.3 (1 dp)
Median = 42
Mode = 42
4. Mean = 10.25
Median = 9
Mode = 8
5. Mean = 59.8 (1 dp)
Median = 59
Mode = 54
6. Mean = 2.3 (1 dp)
Median = 2.2
Mode = 2.4
7. Mean = 24.4 (1 dp)
8. Mean = 13.3
9. Mean = 24.6
10. Mean = 4.9 (1 dp)
11. Mean = 34.0 (1 dp)
12. Mean = 5.5 (1 dp)
13. Mean = 2.9
14. Mean = 121.2
15. Mean = 13.8 (1 dp)

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16. Mode = 4
17. Mode = 34
18. Mode = 5.8
19. Median = 5.5
20. Median = 34
21. Median = 4.4
22. Mean = 9.2 (1 dp)
Median = 8
Mode = 8
23. Mean = 1.85
Median = 2
Mode = 1
24. Mean = 37
Median = 36
25. Mean = 57.7 kg (1 dp)
Median = 55 kg

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26. Mean = 38.4
Median = 39
Mode = 40
27. Mean = 93.5 (1 dp)
Median = 92
Mode = 90
28. 80
29. 1700
30. Mode, because it is the most common size shoe required.

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31. a)

Sport Club	Tally	Freq.
Hockey		7
Tennis		6
Rugby		8
Badminton		5
Athletics		4
None		5
TOTAL		35

- b) Athletics
- c) Rugby
- d) 5
- e) $\frac{15}{35} = 0.43$ (2 dp)
- f) $\frac{12}{35}$

32. a)

Weights (kg)	Tally	Freq.
30 - 34		2
35 - 39		2
40 - 44		3
45 - 49		2
50 - 54		3
55 - 59		8
60 - 64		1
65 - 69		5
70 - 74		1
75 - 79		3
TOTAL		30

- b) 55 - 59 kg
- c) 4
- d) $\frac{9}{30} = 0.3$
- e) $\frac{14}{30} = \frac{7}{15}$
- f) 60 - 64 kg

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33. a)

Day	Tally	Freq.
Monday		6
Tuesday		4
Wednesday		6
Thursday		3
Friday		7
Saturday		5
Sunday		1
TOTAL		32

- b) 32
- c) Friday
- d) Sunday
- e) 6
- f) $\frac{26}{32} = \frac{13}{16}$
- g) $\frac{19}{32} = 59\%$ (2 sf)

34. a)

Days to sprout	Tally	Freq.
40		1
41		2
42		3
43		3
44		7
45		9
46		5
47		4
48		3
49		2
50		1
TOTAL		40

- b) 45
- c) 16
- d) 3
- e) 28
- f) $\frac{3}{40}$

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35.

Calls per day (x)	Frequency f	x.f
1	3	3
2	3	6
3	2	6
4	5	20
5	3	15
6	4	24
7	6	42
8	3	24
9	4	36
TOTAL	33	176

Mean = 5.3 (1 dp)
 Median = 6
 Mode = 7

36.

Score (x)	Frequency f	x.f
0	2	0
5	5	25
10	8	80
15	6	90
20	5	100
25	4	100
TOTAL	30	395

Mean = 13.2 (1 dp)
 Median = 12.5
 Mode = 10

37.

Age (x)	Frequency f	x.f
11	6	66
12	9	108
13	7	91
14	8	112
15	3	45
16	2	32
TOTAL	35	454

Mean = 13.0 (1 dp)
 Median = 13
 Mode = 12

38.

Apples per bag (x)	Frequency f	x.f
45	3	135
48	3	144
49	4	196
50	9	450
52	4	208
54	2	108
TOTAL	25	1241

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Mean = 49.6 apples (1 dp)
 Median = 50
 Mode = 50

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39. a)

Age (x)	Tally	Frequency f	x.f
15		9	135
16		7	112
17		4	68
18		4	72
19		3	57
20		3	60
TOTAL		30	504

b) Mean = 16.8 (1 dp)
 Median = 16
 Mode = 15
 c) 20
 d) $\frac{18}{30} = 0.6$
 e) 5 years

40. a)

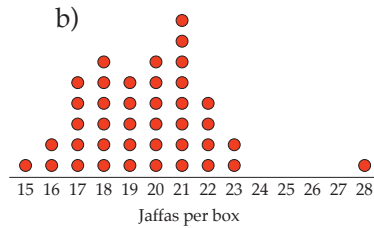
Cars sold (x)	Tally	Frequency f	x.f
1		2	2
2		5	10
3		4	12
4		5	20
5		7	35
6		5	30
7		5	35
8		3	24
9		2	18
10		2	20
TOTAL		40	206

b) Mean = 5.15 (1 dp)
 Median = 5
 Mode = 5
 c) $\frac{7}{40} = 0.175$
 d) $\frac{7}{40}$
 e) 9 cars

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41. a)

No. of jaffas per box	Tally	Frequency
15		1
16		2
17		5
18		6
19		5
20		6
21		8
22		4
23		2
28		1
TOTAL		40



c) 40
 d) 6
 e) 26
 f) 19.6 jaffas (1 dp)
 g) Yes 28. It is considerably larger than the next highest, 23.
 h) $\frac{19}{40}$
 i) 785
 j) 18 jaffas per box.

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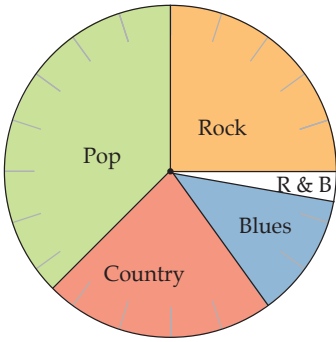
42. a) 27
 b) Monday
 c) 3.9 (1 dp) calls per day.
 d) Because she has more time in the weekend. Probably at work during the week.

43. a) \$25.40
 b) \$2 coins
 c) \$1 coins
 d) 0.12 (2 dp)

44. a) 30
 b) Median = 6
 Mean = 5.9 (1 dp)
 c) 0.73 (2 dp)

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60. Jake's iTunes Music

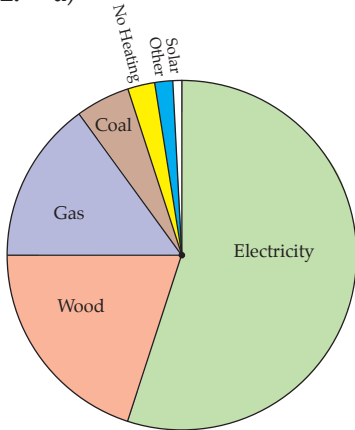


- b) 37.5%
- c) Country and R & B.
- d) $\frac{9}{40}$
- e) 0.125

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61. a) Queenstown
 b) 100
 c) Christchurch
 d) South Island, because percentages add to 55% (over half).
 e) 72°
 f) 75
 g) 18°

62. a)



- b) 500
- c) Electricity and wood
- d) Convenient, clean, quick.

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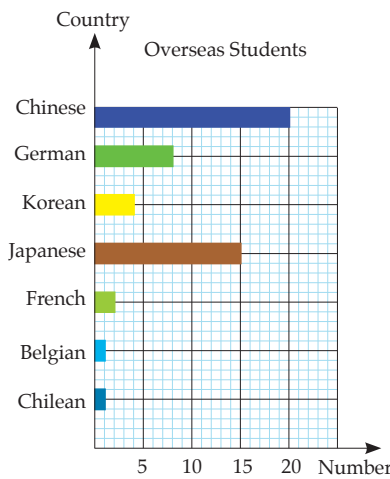
63. a) Nokia
 b) 9%
 c) All other small manufacturers totalled together.
 d) Nokia and Samsung
 e) Apple and Motorola
 f) It totals 100%

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64. a) 36
 b) 2007, 33
 c) 2009–2010, Increase of 10
 d) 8
 e) Dropped from 46 in 2004 to a low of 32 in 2007. From 2008 have increased each year to a high of 48 in 2010.
 f) Greater crime rate.

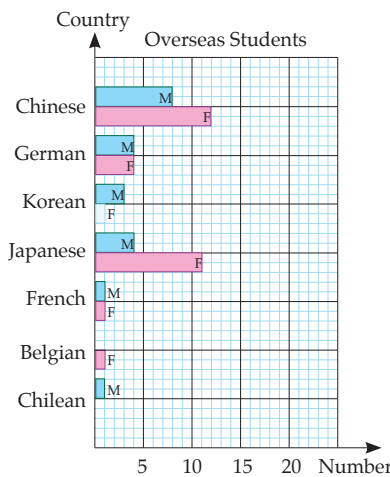
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65. a)



- b) 51
- c) China
- d) 39

e)

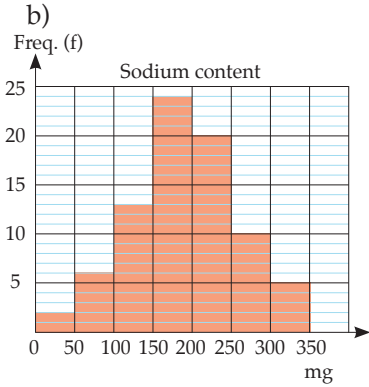


- f) Germany and France
- g) China
- h) 58.8% (1 dp)
- i) $\frac{5}{21} = 0.24$ (2 dp)
- j) $\frac{24}{30} = 0.8$

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66. a) 31
 b) 23
 c) $\frac{5}{31} = 0.16$ (2 dp)
 d) 14 – <16 secs

67. a) 80



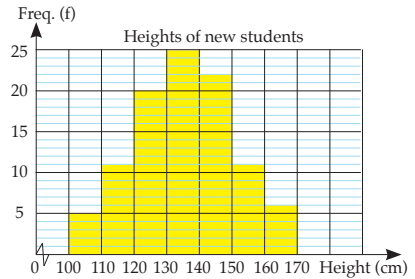
- c) $\frac{59}{80} = 0.74$ (2 dp)
- d) $\frac{5}{80} = 0.06$ (2 dp)

68. a) 34

b) Most workers (20) earn between \$15 and \$20 per hour. Very few (3) earn less than \$15. Only 11 people earn over \$20 per hour.

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69. a)



- b) 130 – 140 cm
- c) 39
- d) and e)

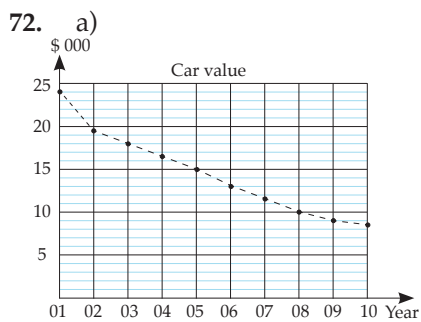
Height (cm)	Frequency (f)	Midpoint (x)	x.f
100 – < 110	5	105	525
110 – < 120	11	115	1265
120 – < 130	20	125	2500
130 – < 140	25	135	3375
140 – < 150	22	145	3190
150 – < 160	11	155	1705
160 – < 170	6	165	990
TOTAL			13550

- f) 13 550
- g) 136 cm (3 sf)

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70. a) 12 °C
 b) 88 °C
 c) 64 °C
 d) 44 °C
 e) 17 mins
 f) 9 mins
71. a) July
 b) February and December
 c) 3 months
 d) Because points in between J, F, M etc. have no meaning.
 e) January
 f) 22 mm
 g) 260 mm

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- b) Dropped a lot in the first year. Continued to drop but at a slower rate.
 c) First year \$4500
 d) 2009 – 2010 only \$500
 e) Reduce but at a slower rate.
73. a) Summer
 b) Winter. Because it is cold, less people buying ice creams.
 c) Increase – if you look at summer the sales they have increased over the last 3 years.

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74. a) 34
 b) Toyota
 c) Mazda
 d) $\frac{5}{34}$
 e) 7
 f) 21
 g) 0.18 (2 dp)

Page 274 cont...

75. a)

Ice Cream Sales	
Trumpet	
Eskimo Pie	
Jelly Tip	
Fru Ju	
Choc Bar	
Meltdown	
Paddle Pop	

Key = 4

- b) 88
 c) Eskimo Pie
 d) 0.11 (2 dp)
 e) \$220

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76. a) 4500
 b) 2007
 c) In 2009, would have expected an increase from 2008, not a decrease.
 d) 2000
 e) 18 000
 f) 3600
 g) 3500

77. a)

Fish Caught	
Abe	
Jane	
Simon	
Karen	
Dave	

Key = 6

- b) 63
 c) 36
 d) 12.6
 e) 33.3% (1 dp)
 f) 25%

Pages 280 – 282

78. a), b), c) and d)
 To be teacher marked.

Topic 6 Probability

Page 284

1. HH, HT, TH, TT

2.

	H	T
1	1,H	1,T
2	2,H	2,T
3	3,H	3,T
4	4,H	4,T
5	5,H	5,T
6	6,H	6,T

3.

	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,6
5	5,1	5,2	5,3	5,4	5,5	5,6
6	6,1	6,2	6,3	6,4	6,5	6,6

4.

	J	C
R	R,J	R,C
G	G,J	G,C
B	B,J	B,C

5. ♣, ♠, ♦, ♥

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6. a) Red, Green, Blue, Yellow

b) $\frac{32}{100}$

c) $\frac{29}{100}$

d) $\frac{39}{100}$

e) $\frac{58}{200}$

7. a) H1, T1, H2, T2, H3, T3, H4, T4, H5, T5, H6, T6

b) 100

c) 45

d) 6

e) $\frac{10}{100}$

f) $\frac{8}{100}$

g) $\frac{45}{300}$

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8. a) $\frac{28}{50}$

b) $\frac{22}{50}$

9. a) $\frac{20}{100}$

b) $\frac{31}{100}$

10. a) $\frac{30}{100}$

b) $\frac{54}{100}$

c) 0

d) 1

11. a) $\frac{5}{20}$

b) $\frac{10}{20}$

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12. $P(\text{green}) = \frac{2}{9}$

13. $P(\text{diamond}) = \frac{13}{52}$

14. $P(\text{even}) = \frac{3}{6}$

15. $P(7) = 0$

16. a) m, a, t, h, s

b) $\frac{1}{5}$

17. a) $P(\text{blue}) = \frac{5}{10}$

b) $P(\text{red or green}) = \frac{5}{10}$

c) $P(\text{black}) = 0$

d) $P(\text{red, green or blue}) = 1$

18. a) BG, GB, GG, BB

b) $P(2 \text{ girls}) = \frac{1}{4}$

19. $P(\text{losing}) = \frac{2}{5}$

20. a) $P(\text{even}) = \frac{5}{10}$

b) $P(> 7) = \frac{3}{10}$

c) $P(2 \text{ and } 8 \text{ incl.}) = \frac{7}{10}$

d) $P(\text{div. by } 3) = \frac{3}{10}$

Page 288 Q20 cont...

e) $P(\text{factor of } 10) = \frac{4}{10}$

21. $P(\text{ace}) = \frac{4}{52}$

22. $P(K, Q, J) = \frac{12}{52}$

Page 289 - 290

Theoretical versus Experimental Probability

Teacher marked.

Page 291

21. a) 1H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T.

b) $P(1 \text{ to } 6 \text{ and tail}) = \frac{6}{12}$

c) $P(\text{even and head}) = \frac{3}{12}$

d) $P(> 4 \text{ and T}) = \frac{2}{12}$

22. a) $P(\text{type B}) = \frac{32}{100}$

b) $P(\text{type O or A}) = \frac{60}{100}$

c) $P(\text{not type AB}) = \frac{92}{100}$

d) 125

23. a) ♣, ♠, ♦, ♥, J

b) $P(\heartsuit) = \frac{1}{5}$

c) $P(J \text{ or } \clubsuit) = \frac{2}{5}$

d) 11 times

24. a) $P(C) = \frac{1}{11}$

b) $P(M) = \frac{2}{11}$

c) $P(A \text{ or } M) = \frac{4}{11}$

d) $P(\text{vowel}) = \frac{4}{11}$

e) $P(P) = 0$

25. a) $P(\text{blue}) = \frac{2}{9}$

b) $P(\text{white}) = \frac{4}{9}$

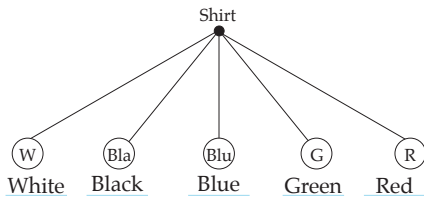
c) $P(\text{blue or red}) = \frac{5}{9}$

d) $P(\text{green}) = 0$

e) $P(\text{not red}) = \frac{6}{9}$

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26. a)



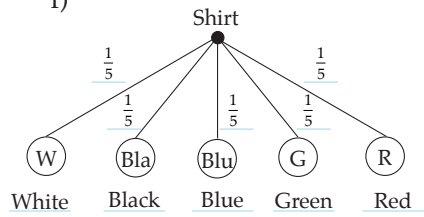
b) W, Bla, Blue, G, R

c) 5

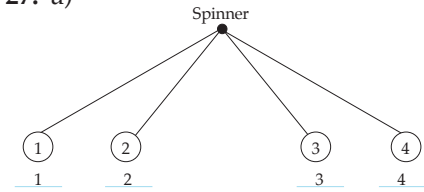
d) $\frac{1}{5}$

e) $\frac{1}{5}$

f)



27. a)



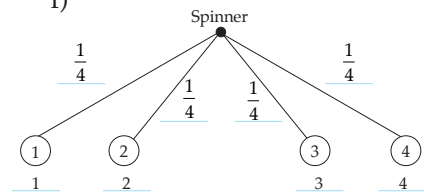
b) 1, 2, 3, 4

c) 4

d) $\frac{1}{4}$

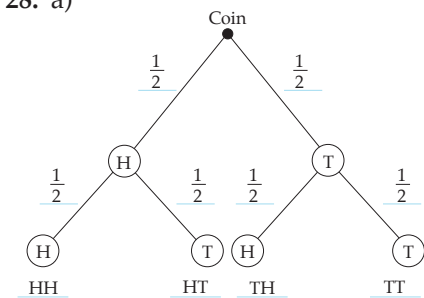
e) 0

f)



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28. a)



b) HH, HT, TH, TT

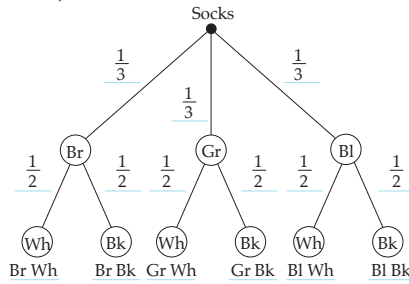
c) 4

d) 1

Page 295 Q28 cont...

e) $\frac{1}{4}$

29. a)



b) Br Wh, Br Bk, Gr Wh, Gr Bk, Bl Wh, Bl Bk

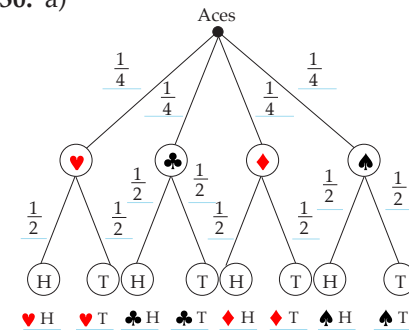
c) 6

d) 3

e) $\frac{3}{6}$

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30. a)



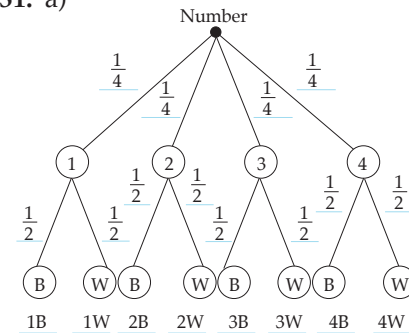
b) $\heartsuit H, \heartsuit T, \clubsuit H, \clubsuit T, \diamondsuit H, \diamondsuit T, \spadesuit H, \spadesuit T$

c) 8

d) 1

e) $\frac{1}{8}$

31. a)



b) 1B, 1W, 2B, 2W, 3B, 3W, 4B, 4W

c) 8

d) 1

e) $\frac{1}{8}$

Topic 7

Numeracy Strategies

Page 297

1. $(25 + 25) + 2 = 52$
2. $(36 + 36) + 3 = 75$
3. $(64 + 64) + 3 = 131$
4. $(75 + 75) + 8 = 158$
5. $(55 + 55) - 2 = 108$
6. $(95 + 95) - 3 = 187$
7. $(68 + 68) + 9 = 145$
8. $(54 + 54) + 5 = 113$
9. $(78 + 78) + 8 = 164$
10. $(187 + 187) + 1 = 375$
11. $(233 + 233) + 5 = 471$
12. $(475 + 475) + 4 = 954$
13. $(352 + 352) - 4 = 700$
14. $(185 + 185) + 12 = 382$
15. $(634 + 634) + 4 = 1272$

Other Approaches Possible

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16. $(73 + 73) - 5 = 141$
\$141
17. $(90 + 90) + 7 = 187$
187 buns
18. $(65 + 65) + 2 = 132$
132 runs
19. $(148 + 148) + 7 = 303$
303 tickets
20. $(34 + 34) - 6 = 62$
62 students
21. $(138 + 138) + 5 = 281$
281 marks
22. $(185 + 185) + 7 = 377$
377 meals
23. $(55 + 55) - 7 = 103$
103 m
24. $(34 + 34) + 3 = 71$
71 minutes
25. $(75 + 75) = 150$, form a double
 $75 + (75 - 7) = 143$, to total 143
 $75 + 68 = 143$,
\$68 for other tool
26. $(46 + 46) = 92$
 $46 + (46 + 3) = 95$
49 minutes
27. $(85 + 85) = 170$
 $85 + (85 - 5) = 165$
\$80

Page 298 cont...

28. $(72 + 72) = 144$
 $72 + (72 + 6) = 150$
78 hours
29. $(65 + 65) = 130$
 $65 + (65 - 5) = 125$
60 circuit boards.

Other Approaches Possible

Page 300

30. $(80 + 43) - 2 = 121$
31. $(63 + 60) - 3 = 120$
32. $(85 + 100) - 3 = 182$
33. $(269 + 100) + 7 = 376$
34. $(500 + 279) + 12 = 791$
35. $(700 + 341) - 5 = 1036$
36. $(207 + 150) - 1 = 356$
37. $(174 + 400) - 4 = 570$
38. $(300 + 439) - 12 = 727$
39. $(982 + 800) - 4 = 1778$
40. $(300 + 373) - 9 = 664$
41. $(279 + 200) + 8 = 487$
42. $(2000 + 3465) - 4 = 5461$
43. $(2000 + 2769) + 12 = 4781$
44. $(3000 + 1897) + 15 = 4912$
45. $(700 + 255) + 12 = 967$
\$967
46. $(600 + 547) - 5 = 1142$
1142 pavers
47. $(500 + 467) - 7 = 960$
960 ice creams
48. $(300 + 375) - 11 = 664$
664 sausages
49. $(427 + 500) + 17 = 944$
944 sheep
50. $(400 + 249) - 5 = 644$
\$644
51. $(700 + 249) + 15 = 964$
\$964
52. $(319 + 500) - 12 = 807$
807 runs
53. $(400 + 259) - 6 = 653$
\$653
54. $(400 + 169) + 18 = 587$
\$587

Other Approaches Possible

Page 301

- B $(250 + 262) - 5 = \$507$
- O $(900 + 658) - 4 = \$1554$
- Y $(865 + 865) - 7 = \$1723$
- F $(400 + 245) - 10 = 635 \text{ g}$
- N $(677 + 300) + 15 = 992$
- S $(500 + 429) + 12 = 941$
- C $(300 + 379) - 4 = 675$
- U $180 + (180 - 3) = 360$
\$177
- H $(345 + 345) + 22 = 712$
- R $(156 + 156) + 7 = 319$
- T $(200 + 275) - 14 = \$461$
- M $(1700 + 1687) + 5 = \$3392$
- A $(800 + 1895) - 11 = \$2684$
- R $(1600 + 458) + 19 = \$2077$
- E $(1800 + 2145) - 20 = 3925$

Why don't they celebrate Fathers' Day in Egypt?

BECAUSE THERE ARE MORE MUMMYS THAN FATHERS.

Page 303

55. $65 + 20 + 3 = 88$
56. $42 + 30 + 5 = 77$
57. $86 + 30 + 3 = 119$
58. $142 + 300 + 50 + 6 = 498$
59. $545 + 400 + 30 + 1 = 976$
60. $237 + 500 + 40 = 777$
61. $1452 + 2000 + 300 + 30 + 1 = 3783$
62. $5216 + 3000 + 600 + 70 + 2 = 8888$
63. $4280 + 1000 + 700 + 9 = 5989$
64. $3561 + 2000 + 400 + 10 + 8 = 5979$
65. $7274 + 2000 + 600 + 10 + 5 = 9889$
66. $3271 + 1000 + 400 + 10 + 2 = 4683$
67. $8482 + 1000 + 500 + 10 + 7 = 9999$
68. $4163 + 3000 + 800 + 20 + 5 = 7988$
69. $5426 + 3000 + 500 + 20 + 3 = 8949$
70. $384 + 400 + 10 + 5 = \$799$
71. $7460 + 2000 + 300 + 10 + 5 = \9775
72. $5749 + 2000 + 200 + 30 = 7979$

Page 303 cont...

73. $2185 + 1000 + 800 + 10$
= \$3995
74. $1533 + 1000 + 200 + 6 = 2739$
75. $4712 + 5000 + 200 + 60 + 7$
= \$9979
76. $7524 + 2000 + 100 + 60$
= 9684 km
77. $3482 + 2000 + 400 + 10 + 6$
= 5898
78. $5820 + 3000 + 100 + 20 + 5$
= \$8945
79. $1125 + 700 + 50 = \$1875$

Other Approaches Possible

Page 304

80. (T) – Tidy Numbers
 $(500 + 234) - 4$
81. (N) – Near Doubles
 $(350 + 350) + 31$
82. (P) – Place Value
 $2351 + 1000 + 600 + 40 + 2$
83. (T) – Tidy Numbers
 $(2000 + 2479) - 15$
84. (N) – Near Doubles
 $(2500 + 2500) + 154$
85. (P) – Place Value
 $3714 + 2000 + 200 + 50 + 5$
86. (T) – Tidy Numbers
 $(2000 + 1705) - 44$
87. (N) – Near Doubles
 $(6825 + 6825) + 18$
88. (T) – Tidy Numbers
 $(4000 + 4869) - 25$
89. (P) – Place Value
 $5246 + 4000 + 700 + 30 + 2$
90. (T) – Tidy Numbers
 $(2000 + 2356) - 8$
91. (N) – Near Doubles
 $(1480 + 1480) - 25$
92. (P) – Place Value
 $3854 + 2000 + 100 + 40 + 2$
93. (T) – Tidy Numbers
 $(1825 + 800) - 20$

Other Approaches Possible

Page 306

94. $100 + 80 + 7$
 $400 + 30 + 2$
Answer 619

Page 306 cont...

95. $200 + 90 + 3$
 $600 + 80 + 9$
Answer 982
96. $400 + 30 + 6$
 $300 + 70 + 2$
Answer 808
97. $100 + 70 + 4$
 $500 + 60 + 7$
Answer 741
98. $2000 + 700 + 30 + 1$
 $6000 + 800 + 0 + 9$
Answer 9540
99. $5000 + 0 + 90 + 5$
 $2000 + 700 + 90 + 9$
Answer 7894
100. $4000 + 800 + 70 + 9$
 $2000 + 800 + 60 + 4$
Answer 7743
101. $5000 + 300 + 80 + 9$
 $4000 + 700 + 60 + 3$
Answer 10 152

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102. $800 + 60 + 5$
 $900 + 80 + 8$
Answer \$1853
103. $100 + 80 + 4$
 $100 + 30 + 8$
Answer \$322
104. $100 + 70 + 2$
 $100 + 80 + 9$
Answer 361
105. $200 + 90 + 2$
 $100 + 70 + 5$
Answer 467
106. $200 + 70 + 8$
 $100 + 60 + 7$
Answer 445
107. $600 + 70 + 9$
 $1000 + 200 + 40 + 8$
Answer \$1927
108. $4000 + 700 + 60 + 2$
 $1000 + 900 + 20 + 7$
Answer \$6689
109. $3000 + 900 + 80 + 5$
 $1000 + 900 + 20 + 7$
Answer \$5912
110. $7000 + 500 + 60 + 5$
 $800 + 70 + 8$
Answer \$8443
111. $2000 + 600 + 70 + 9$
 $800 + 20 + 9$
Answer \$3508

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112. $58 - 20 - 3 = 35$
113. $79 - 50 - 6 = 23$
114. $94 - 30 - 7 = 57$
115. $451 - 200 - 30 - 7 = 214$
116. $674 - 300 - 50 - 4 = 320$
117. $905 - 100 - 40 - 4 = 761$
118. $4561 - 3000 - 400 - 50 - 2$
= 1109
119. $6791 - 2000 - 500 - 60 - 3$
= 4228
120. $2805 - 1000 - 600 - 50 - 2$
= 1153
121. $9851 - 6000 - 400 - 20 - 8$
= 3423
122. $7450 - 3000 - 600 - 50 - 8$
= 3792
123. $6500 - 2000 - 400 - 70 - 9$
= 4021
124. $8460 - 2000 - 500 - 8$
= 5952
125. $12647 - 8000 - 700 - 60 - 9$
= 3878
126. $73726 - 10000 - 3000 - 500$
 $- 40 - 5$
= 60181
127. $995 - 600 - 70 = \$325$
128. $1695 - 400 - 30 - 5 = \$1260$
129. $47500 - 10000 - 6000 - 400 - 30 = 31 070$
130. $1235 - 800 - 20 - 5 = \$410$
131. $28950 - 20000 - 2000 - 400 - 70 - 5 = \6475
132. $17580 - 10000 - 6000 - 400 - 70 - 5 = 1105 \text{ km}$
133. $395800 - 200000 - 40000 - 5000 - 500 = \$150 300$
134. $59860 - 40000 - 7000 - 900 - 50 - 5 = \$11 905$

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- K $235 + 300 + 50 + 4 = 589$
- O $597 - 300 - 40 - 6 = 251$
- Y $634 + 200 + 50 + 8 = 892$
- M $954 - 200 - 30 - 7 = 717$
- O $1473 + 2000 + 500 + 10 + 9$
= 3992
- D $7638 - 2000 - 100 - 40 - 5$
= 5493
- U $9374 + 2000 + 600 + 30 + 5$
= 12 009

Page 310 cont...

- L $8614 - 2000 - 500 - 80 - 3 = 6031$
- I $23479 + 60000 + 5000 + 400 + 10 + 7 = 88\ 896$
- L $96483 - 40000 - 5000 - 100 - 90 - 4 = 51\ 289$
- O $46812 + 30000 + 2000 + 100 + 90 + 8 = 79\ 010$
- I $78249 - 40000 - 5000 - 100 - 80 - 7 = 33062$
- E $28483 + 10000 + 6000 + 500 + 60 + 1 = 45\ 044$
- V $94237 - 30000 - 3000 - 500 - 10 - 8 = 60719$
- A $64923 + 10000 + 2000 + 500 + 90 + 1 = 77\ 514$

What did one volcano say to the other?

DO YOU LAVA ME LIKE I LAVA YOU.

Page 312

135. $37 + ? = 83$
 $37 + (3 + 40 + 3) = 83$
 $? = 46$
136. $164 + ? = 258$
 $164 + (6 + 30 + 58) = 258$
 $? = 94$
137. $65 + ? = 93$
 $65 + (5 + 23) = 93$
 $? = 28$
138. $84 + ? = 127$
 $84 + (6 + 10 + 27) = 127$
 $? = 43$
139. $144 + ? = 273$
 $144 + (6 + 50 + 73) = 273$
 $? = 129$
140. $487 + ? = 618$
 $487 + (3 + 10 + 118) = 618$
 $? = 131$
141. $267 + ? = 555$
 $267 + (3 + 30 + 255) = 555$
 $? = 288$
142. $358 + ? = 797$
 $358 + (2 + 40 + 397) = 797$
 $? = 439$

Page 312 cont...

143. $1288 + ? = 1475$
 $1288 + (2 + 10 + 175) = 1475$
 $? = 187$
144. $4658 + ? = 8930$
 $4658 + (42 + 300 + 3930) = 8930$
 $? = 4272$
145. $291 + ? = 679$
 $291 + (9 + 379) = 679$
 $? = 388$
146. $317 + ? = 588$
 $317 + (3 + 80 + 188) = 588$
 $? = 271$
147. $2763 + ? = 4681$
 $2763 + (7 + 30 + 200 + 1681) = 4681$
 $? = 1918$
148. $789 + ? = 1651$
 $789 + (1 + 10 + 851) = 1651$
 $? = 862$
149. $873 + ? = 2482$
 $873 + (7 + 20 + 100 + 1482) = 2482$
 $? = 1609$
150. $1985 + ? = 4783$
 $1985 + (5 + 10 + 2783) = 4783$
 $? = \$2798$
151. $289 + ? = 758$
 $289 + (1 + 10 + 458) = 758$
 $? = \$469$
152. $478 + ? = 694$
 $478 + (2 + 20 + 194) = 694$
 $? = 216$
153. $784 + ? = 1476$
 $784 + (6 + 10 + 676) = 1476$
 $? = 692$

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154. $4655 + ? = 9230$
 $4655 + (5 + 40 + 300 + 4230) = 9230$
 $? = \$4575$

Page 313 cont...

155. $578 + ? = 987$
 $578 + (2 + 20 + 387) = 987$
 $? = \$409$
156. $378 + ? = 845$
 $378 + (2 + 20 + 445) = 845$
 $? = 467$
157. $943 + ? = 1267$
 $943 + (7 + 50 + 267) = 1267$
 $? = 324$
158. $1495 + ? = 1865$
 $1495 + (5 + 365) = 1865$
 $? = \$370$
159. $1425 + ? = 2578$
 $1425 + (5 + 70 + 500 + 578) = 2578$
 $? = \$1153$
160. $2749 + ? = 4995$
 $2749 + (1 + 50 + 200 + 1995) = 4995$
 $? = \$2246$
161. $3872 + ? = 6995$
 $3872 + (8 + 20 + 100 + 2995) = 6995$
 $? = \$3123$
162. $6475 + ? = 7695$
 $6475 + (5 + 20 + 500 + 695) = 7695$
 $? = \$1220$
163. $1346 + ? = 2995$
 $1346 + (4 + 50 + 600 + 995) = 2995$
 $? = \$1649$
164. $1279 + ? = 2480$
 $1279 + (1 + 20 + 700 + 480) = 2480$
 $? = 1201$
165. $46584 + ? = 60000$
 $46584 + (6 + 10 + 400 + 13000) = 60000$
 $? = 13\ 416$

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166. $(4 \times 50) + (4 \times 6)$
= 224
167. $(5 \times 80) + (5 \times 3)$
= 415
168. $(3 \times 60) + (3 \times 7)$
= 201
169. $(4 \times 90) + (4 \times 4)$
= 376
170. $(6 \times 70) + (6 \times 8)$
= 468
171. $(8 \times 60) + (8 \times 6)$
= 528
172. $(5 \times 100) + (5 \times 20) + (5 \times 5)$
= 625
173. $(3 \times 200) + (3 \times 30) + (3 \times 8)$
= 714
174. $(6 \times 400) + (6 \times 30) + (6 \times 8)$
= 2628
175. $(4 \times 300) + (4 \times 70) + (4 \times 8)$
= 1512
176. $(9 \times 200) + (9 \times 10) + (9 \times 9)$
= 1971
177. $(7 \times 600) + (7 \times 30) + (7 \times 9)$
= 4473
178. $(3 \times 1000) + (3 \times 200) + (3 \times 40)$
= 3720
179. $(5 \times 2000) + (5 \times 50) + (5 \times 6)$
= 10 280
180. $(6 \times 3000) + (6 \times 200) + (6 \times 10)$
+ (6×6)
= 19 296
181. $(8 \times 5000) + (8 \times 400) + (8 \times 70)$
+ (8×3)
= 43 784
182. $(4 \times 4000) + (4 \times 200) + (4 \times 90)$
+ (4×1)
= 17 164
183. $(2 \times 3000) + (2 \times 800) + (2 \times 50)$
+ (2×4)
= 7708

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184. $(3 \times 200) + (3 \times 40) + (3 \times 4)$
= \$732
185. $(5 \times 100) + (5 \times 40) + (5 \times 8)$
= \$740
- Page 316**
186. $(8 \times 40) + (8 \times 7)$
= 376
187. $(7 \times 40) + (7 \times 2)$
= 294
188. $(9 \times 100) + (9 \times 30) + (9 \times 4)$
= \$1206
189. $(8 \times 300) + (8 \times 60) + (8 \times 8)$
= \$2944
190. $(12 \times 100) + (12 \times 60) + (12 \times 8)$
= \$2016
191. $(8 \times 100) + (8 \times 60) + (8 \times 5)$
= \$1320
192. $(6 \times 100) + (6 \times 20) + (6 \times 4)$
= \$744
193. $(8 \times 40) + (8 \times 3)$
= 344
194. $(12 \times 60) + (12 \times 8)$
= \$816
195. $(7 \times 100) + (7 \times 50) + (7 \times 8)$
= 1106
196. $(12 \times 200) + (12 \times 70) + (12 \times 4)$
= 3288 + 453
= \$3741
197. $(9 \times 100) + (9 \times 90) + (9 \times 5)$
= 1755 + 585
= \$2340

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198. $(40 \times 8) + (3 \times 8)$
= 344
199. $(90 \times 6) - (3 \times 6)$
= 522
200. $(100 \times 4) - (7 \times 4)$
= 372
201. $(130 \times 3) - (3 \times 3)$
= 381

Page 318 cont...

202. $(140 \times 8) - (1 \times 8)$
= 1112
203. $(250 \times 4) + (7 \times 4)$
= 1028
204. $(350 \times 2) + (16 \times 2)$
= 732
205. $(500 \times 9) - (2 \times 9)$
= 4482
206. $(720 \times 7) + (2 \times 7)$
= 5054
207. $(1025 \times 4) - (2 \times 4)$
= 4092
208. $(3500 \times 6) + (2 \times 6)$
= 21 012
209. $(1900 \times 3) - (4 \times 3)$
= 5688
210. $(5000 \times 7) - (11 \times 7)$
= 34 923
211. $(1900 \times 3) - (4 \times 3)$
= 5688
212. $(10000 \times 8) - (2 \times 2)$
= 79 984
213. $(50 \times 6) - (3 \times 6)$
= 282
214. $(200 \times 4) - (5 \times 4)$
= \$780
 $(800 \times 4) - (20 \times 4)$
= \$3120
215. $(3500 \times 12) - (20 \times 12)$
= \$41 760
216. $(40 \times 7) - (4 \times 7)$
= 252
217. $(400 \times 9) + (16 \times 9)$
= \$3744
218. $(60 \times 8) - (2 \times 8)$
= \$464
219. $(1300 \times 3) + (23 \times 3)$
= \$3969
220. $(800 \times 7) + (15 \times 7)$
= \$5705

Page 318 cont...

$$221. (2050 \times 9) - (1 \times 9) \\ = \$18\,441$$

$$222. (6000 \times 7) - (22 \times 7) \\ = \$41\,846$$

Other Approaches Possible

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$$T \quad (90 \times 8) - (3 \times 8) \\ = 696$$

$$Y \quad (40 \times 7) + (4 \times 7) \\ = 308$$

$$L \quad (130 \times 6) - (1 \times 6) \\ = 774$$

$$W \quad (200 \times 4) + (30 \times 4) + (1 \times 4) \\ = 924$$

$$I \quad (300 \times 5) + (20 \times 5) + (3 \times 5) \\ = 1615$$

$$D \quad (250 \times 3) - (1 \times 3) \\ = 747$$

$$H \quad (700 \times 9) - (8 \times 9) \\ = 6228$$

$$K \quad (700 \times 3) + (24 \times 3) \\ = 2172$$

$$R \quad (900 \times 6) + (5 \times 6) \\ = 5430$$

$$N \quad (500 \times 5) + (12 \times 5) \\ = 2560$$

$$E \quad (600 \times 4) + (30 \times 4) + (4 \times 4) \\ = 2536$$

$$S \quad (1000 \times 4) + (12 \times 4) \\ = 4048$$

$$O \quad (4000 \times 8) + (300 \times 8) + (10 \times 8) \\ + (5 \times 8) = 34\,520$$

$$C \quad (7000 \times 6) + (19 \times 6) \\ = 42\,114$$

$$W \quad (8000 \times 3) + (200 \times 3) + (40 \times 3) \\ + (1 \times 3) = 24\,723$$

Why do candle trimmers work so few days a week?

THEY ONLY WORK ON WICK-ENDS.

Other Approaches Possible

Page 321

$$223. 56 \div 8 = 7$$

$$224. 108 \div 6 \\ 54 \div 3 = 18$$

$$225. 132 \div 3 = 44$$

$$226. 102 \div 3 = 34$$

$$227. 216 \div 9 \\ 72 \div 3 = 24$$

$$228. 212 \div 4 \\ 106 \div 2 = 53$$

$$229. 534 \div 3 = 178$$

$$230. 768 \div 3 = 256$$

$$231. 704 \div 4 \\ 352 \div 2 = 176$$

$$232. 182 \div 7 = 26$$

$$233. 320 \div 5 = 64$$

$$234. 736 \div 16 \\ 368 \div 8$$

$$184 \div 4 \\ 92 \div 2 = 46$$

$$235. 1080 \div 9 \\ 360 \div 3 = \$120$$

$$236. 2800 \div 16 \\ 1400 \div 8 \\ 700 \div 4 \\ 350 \div 2 = \$175$$

$$237. 816 \div 24 \\ 408 \div 12 \\ 204 \div 6 \\ 102 \div 3 = \$34$$

$$238. 612 \div 9 \\ 204 \div 3 = 68 \text{ g}$$

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$$239. 530 \div 2 = \$265$$

$$240. 784 \div 7 = \$112$$

$$241. 555 \div 3 = \$185$$

$$242. 3870 \div 6 \\ 1935 \div 3 = 645 \text{ km/h}$$

$$243. 448 \div 7 = \$64$$

$$244. 1096 \div 4 \\ 548 \div 2 = 274$$

$$245. 2415 \div 7 = 345 \text{ km}$$

$$246. 31200 \div 26 \\ 15600 \div 13 = \$1200$$

$$247. 3240 \div 18 \\ 1620 \div 9$$

$$540 \div 3 = \$180$$

$$248. 126 \div 42 \\ 63 \div 21 = 3$$

Other Approaches Possible

Page 324

$$249. 7 \times ? = 161$$

$$7 \times 20 = 140$$

$$7 \times 23 = 161$$

$$? = 23$$

$$250. 4 \times ? = 172$$

$$4 \times 40 = 160$$

$$4 \times 43 = 172$$

$$? = 43$$

$$251. 5 \times ? = 135$$

$$5 \times 30 = 150$$

$$5 \times 27 = 135$$

$$? = 27$$

$$252. 9 \times ? = 198$$

$$9 \times 20 = 180$$

$$9 \times 22 = 198$$

$$? = 22$$

$$253. 8 \times ? = 336$$

$$8 \times 40 = 320$$

$$8 \times 42 = 336$$

$$? = 42$$

$$254. 7 \times ? = 546$$

$$7 \times 80 = 560$$

$$7 \times 78 = 546$$

$$? = 78$$

Page 324 cont...

255. $3 \times ? = 384$
 $3 \times 125 = 375$
 $3 \times 128 = 384$
 $? = 128$
256. $4 \times ? = 468$
 $4 \times 120 = 480$
 $4 \times 117 = 468$
 $? = 117$
257. $9 \times ? = 702$
 $9 \times 80 = 720$
 $9 \times 78 = 702$
 $? = 78$
258. $8 \times ? = 1576$
 $8 \times 200 = 1600$
 $8 \times 197 = 1576$
 $? = 197$
259. $6 \times ? = 1218$
 $6 \times 200 = 1200$
 $6 \times 203 = 1218$
 $? = 203$
260. $4 \times ? = 1412$
 $4 \times 350 = 1400$
 $4 \times 353 = 1412$
 $? = 353$
261. $12 \times ? = 996$
 $12 \times 80 = 960$
 $12 \times 83 = 996$
 $? = 83$
262. $11 \times ? = 1089$
 $11 \times 100 = 1100$
 $11 \times 99 = 1089$
 $? = 99$
263. $7 \times ? = 2786$
 $7 \times 400 = 2800$
 $7 \times 398 = 2786$
 $? = 398$
264. $6 \times ? = 2976$
 $6 \times 500 = 3000$
 $6 \times 496 = 2976$
 $? = 496$

Page 324 cont...

265. $3 \times ? = 1005$
 $3 \times 330 = 990$
 $3 \times 335 = 1005$
 $? = 335$
266. $8 \times ? = 2016$
 $8 \times 250 = 2000$
 $8 \times 252 = 2016$
 $? = 252$

Other Approaches Possible

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267. $35 \times ? = 1435$
 $35 \times 40 = 1400$
 $35 \times 41 = 1435$
 $? = \$41$
268. $6 \times ? = 1794$
 $6 \times 300 = 1800$
 $6 \times 299 = 1794$
 $? = 299$
269. $12 \times ? = 1020$
 $12 \times 80 = 960$
 $12 \times 85 = 1020$
 $? = 85$
270. $9 \times ? = 1062$
 $9 \times 110 = 990$
 $9 \times 118 = 1062$
 $? = \$118$
271. $8 \times ? = 2384$
 $8 \times 300 = 2400$
 $8 \times 298 = 2384$
 $? = 298$
272. $6 \times ? = 41970$
 $6 \times 7000 = 42000$
 $6 \times 6995 = 41970$
 $? = \$6995$
273. $4 \times ? = 2788$
 $4 \times 700 = 2800$
 $4 \times 697 = 2788$
 $? = 697$
274. $3 \times ? = 168$
 $3 \times 60 = 180$
 $3 \times 56 = 168$
 $? = 56$

Page 325 cont...

275. $12 \times ? = 1044$
 $12 \times 90 = 1080$
 $12 \times 87 = 1044$
 $? = \$87$
276. $9 \times ? = 1368$
 $9 \times 150 = 1350$
 $9 \times 152 = 1368$
 $? = 152$

Other Approaches Possible

Page 326

- W $256 \div 32$
 $128 \div 16$
 $64 \div 8 = 8$
- T $8 \times ? = 192$
 $8 \times 25 = 200$
 $8 \times 24 = 192$
 $? = 24$
- A $14 \times ? = 252$
 $14 \times 20 = 280$
 $14 \times 18 = 252$
 $? = 18$
- R $324 \div 9$
 $108 \div 3 = 36$
- O $560 \div 14$
 $280 \div 7 = 40$
- H $8 \times ? = 712$
 $8 \times 90 = 720$
 $8 \times 89 = 712$
 $? = 89$
- W $7 \times ? = 217$
 $7 \times 30 = 210$
 $7 \times 31 = 217$
 $? = 31$
- L $630 \div 42$
 $315 \div 21$
 $105 \div 7 = 15$
- E $9 \times ? = 351$
 $9 \times 40 = 360$
 $9 \times 39 = 351$
 $? = 39$

Page 326 cont...

D $405 \div 9$
 $135 \div 3 = 45$

A $6 \times ? = 468$
 $6 \times 80 = 480$
 $6 \times 78 = 468$
 $? = 78$

E $7 \times ? = 441$
 $7 \times 60 = 420$
 $7 \times 63 = 441$
 $? = 63$

L $288 \div 32$
 $144 \div 16$
 $72 \div 8 = 9$

E $4 \times ? = 792$
 $4 \times 200 = 800$
 $4 \times 198 = 792$
 $? = 198$

S $3 \times ? = 513$
 $3 \times 170 = 510$
 $3 \times 171 = 513$
 $? = 171$

What is a cannibal's favourite game?

SWALLOW THE LEADER.

Topic 8 Practice Assessments

Assessment Schedule – Number – Pages 327 – 328

Question No.	Achievement	Merit	Excellence	Justification
	Solve problems involving whole numbers decimals and fractions.	Solve number problems.	Solve number problems in context involving several steps.	
1 (a)	\$1179			A
1 (b)		$499 \times 1.38 = \$688.62$ $799 - 688.62 =$ $\$110.38$ \$110 nearest dollar.		M
1 (c)			Wi-Fi models difference $+\$110.38$ $+\$152.38$ $+\$184.38$ Wi-Fi + 3G models difference $+\$130.98$ $+\$172.98$ $+\$204.98$ The 16GB Wi-Fi iPad is the best value because you only pay \$110.38 more than the USA price.	E Must show calculations and draw appropriate conclusion. Other valid approach acceptable i.e. using percentages.
1 (d)	180 000			A
1 (e)		2.098×10^9		A/M
1 (f)	$\frac{13}{70} \times \frac{2}{7} = \frac{13}{70}$	$\frac{13}{70} \times 420 = 78$		A/M
1 (g)	$1170 - 979 = \$191$			A
Sufficiency	2 of A or better	Achievement plus 2 of M or 3 of M	Merit plus E	

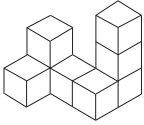
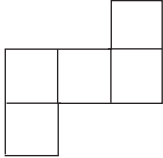
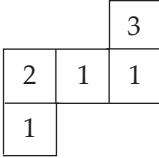
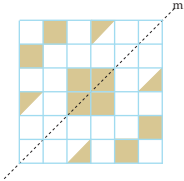
Assessment Schedule – Algebra – Pages 329 – 331

Question No.	Achievement	Merit	Excellence	Justification
	Describe simple arithmetic or geometric patterns. Plot and interpret simple graphs. Solve simple equations. Carry out simple algebraic manipulations.	Find terms and rules for patterns. Interpret linear graphs. Solve linear equations.	Solve algebra problems using graphs and manipulation.	
1 (a)	105, 120			A1 Require both.
1 (b)	660 minutes			A1
1 (c)		$M = 15D + 15$		M
1 (d)	Straight line through correctly plotted points.			A1
1 (e)			Correctly drawn line passing through (0, 95), (1, 90), (2, 85) etc. Identify point of intersection as Day 4 and 75 minutes revision time.	E
2 (a)	$x = 6$			A2
2 (b)	$12p^3q$			A2
2 (c)	$T = a + c$	$T = 2c + c$ $T = 3c$		A2/M
2 (d)		$15 - 2n = 7$ $n = 4$		M Must give equation and then solve.
Sufficiency	3A with at least 1 A1 and 1 A2 or better	Achievement plus 2M or better	Merit plus 1E	

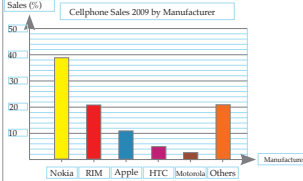
Assessment Schedule – Measurement – Pages 332 – 334

Question No.	Achievement	Merit	Excellence	Justification
	Use measurements in calculations and conversions to solve simple problems.	Solve measurement problems.	Solve more complicated measurement problems.	
1 (a)	18° C			A1
1 (b)	36 units			A1
1 (c)	50 units ²			A1
1 (d)(i)		Vol. = 100 cm ³		M
1 (d)(ii)			Vol. of truck tray = 250 × 140 × 80 (cm) = 2 800 000 cm ³ No. of plastic containers = 2 800 000 ÷ 80 = 35 000 containers	E
1 (d)(iii)		3 × 60 × 60 ÷ 45 = 240 containers		M
2 (a)	Bean, lima Watermelon Cucumber			A2 Must have all three.
2 (b)	Onion, bunching 10 to 14 days			A2 Must have vegetable plus germination time.
2 (c)		10 hours 45 minutes		M
Sufficiency	2 or better of A1 and 1 or better of A2	Achievement plus 2M or 3M	Merit plus E	

Assessment Schedule – Shape – Pages 335 – 337

Question No.	Achievement	Merit	Excellence	Justification
	Perform simple transformations. Solve simple angle problems. Produce a drawing representing a 3-dimensional shape.	Perform and describe transformations. Solve simple angle problems and give reasons. Produce a representation of a simple 3-dimensional shape. Carry out simple constructions.	Demonstrate an understanding of drawing techniques associated with geometry. Calculate angles giving reasons.	
1 (a)				A1
1 (b)				A1/M1
1 (c)				A1
1 (d)		A rotation of 270° about O the centre of enlargement.		M1 Or equivalent.
2 (a)	$55^\circ \pm 1^\circ$			A2
2 (b)	Bisected correctly with construction lines shown.			A1
2 (c)	$a = 54^\circ$ $b = 100^\circ$ $c = 26^\circ$	Alternate angles are equal, // lines. Adj. angles on a str. line sum to 180° . Int. angles of a tri. sum to 180° .		A2 + M2 A2 + M2 A2 + M2 Watch consistency if angle a is incorrect.
2 (d)		305°	ACB = 58° , Vert. opp angles are equal. ABC interior = 55° , Int. angles of a triangle sum to 180° . ABC reflex. = 305° , Angles at a point sum to 360° .	E M2 for angle answer with no geometric reasons.
Sufficiency	2 of A1 or better and 2 of A2 or better	Achievement plus 1 M1 and 1 M2 or better	Merit plus 1E	

Assessment Schedule – Statistics and Probability – Pages 338 – 340

Question No.	Achievement	Merit	Excellence	Justification
	Carry out statistical graphing and calculations for data and determine probabilities.	Carry out statistical processes and determine probabilities	Solve theoretical probability problems and comment on significant features shown by comparative graphs.	
1 (a)	Bar graph with all boxes filled in correctly. 			A1 Allow one minor error.
1 (b)	1 801 800			A1
1 (c) (i)	87 texts			A1
1 (c) (ii)		$1891 \div 23 = 82.2$ texts per day		M Accept 82 or 83. Working required.
2 (a)	0.75			A2
2 (b)	Prob. = $0.25 \times 0.20 = 0.05$	Num. = $320 \times 0.05 = 16$ students		A2/M
2 (c)	Prob. = $0.75 \times 0.90 = 0.675$			A2
3 (a)			No, spending more in 2009 than in 2003. In 2003 people were spending \$900 per year, whereas in 2009 they were spending \$1100.	E Require correct conclusion plus figures to back up conclusion.
3 (b)	Less familiar with technology.	Less disposable income. Less influenced by latest trends. Over 65's usually have a landline.		A2/M One valid reason for A2, two valid reasons for M.
Sufficiency	2 or 3 of A1 and 2 or 3 of A2	Achievement plus 1M or 2M	Merit plus E	