

Answers

10's, 100's and 1000's - Page 7

- 1) a) 30 b) 180 c) 540 d) 4,560 e) 31 f) 85.4 g) 4525.5
h) 8 i) 5.4 j) 5.39 k) 0.3 l) 0.54 m) 0.043 n) 0.003
2) a) 600 b) 2700 c) 12,900 d) 45,600 e) 930 f) 3,780
g) 42.6 h) 70 i) 0.3 j) 0.32 k) 0.25 l) 0.023 m) 0.4 n) 3.001
3) a) 6,000 b) 53,000 c) 693,000 d) 900,000 e) 2,670
f) 78,200 g) 26,976 h) 500 i) 530 j) 40 k) 4 l) 47.5 m) 1
n) 0.34
4) a) 0.5 b) 6.2 c) 45.9 d) 653.9 e) 0.58 f) 0.276 g) 84.371
h) 0.05 i) 0.0004 j) 0.064 k) 0.0547 l) 0.003 m) 0.00046
n) 0.0000328
5) a) 0.09 b) 0.14 c) 3.67 d) 18.53 e) 0.068 f) 0.2374
g) 0.029786 h) 0.007 i) 0.0027 j) 0.00064 k) 0.00839
l) 0.0001 m) 0.000002 n) 0.0000654
6) a) 0.002 b) 0.049 c) 0.386 d) 4.638 e) 0.0038 f) 0.0185
g) 0.004076 h) 0.0006 i) 0.000643 j) 0.000062 k) 0.000007
l) 0.0003061 m) 0.000003 n) 0.00001001
7) a) 276 b) 552 c) 138 d) 55.2 e) 1380
8) a) 0.0356 b) 0.0178 c) 0.0712 d) 0.178 e) 0.712
9) From the top right - clockwise
1, 1000, 64.1, 0.641, 10, 0.00641, 100, 0.0641

Rounding off Whole Numbers - Page 8

- 1) a) 1344 1340 1300
1086 1090 1100
997 980 1000
852 850 900
b) Anything between 1305 and 1314
c) Anything between 1045 and 1049 and between 1050 and 1054
2) a) 39,267 39,270 39,300
16,014 16,010 16,000
8,219 8,220 8,200
11,806 11,810 11,800
b) Anything between 13,015 and 13,024
c) Anything between 15,450 and 15,499 and between 15,500 and 15,549
d) 17,996 and 18,002

Negatives - Page 9

- 1) -14, -10, -6, 4, 7, 12
2) 12°C, -5°C, 7°C, 10°C, -3°C
3) -20, -10, 5, 15
4) a) -7°C b) 21°C
5) a) 5 b) -5 c) -10 d) -20

Number Cards - Page 10

- a) -3 b) 0 c) +7 d) -9 e) +7 f) -9 g) -1 h) -1 i) -1
j) -9 k) 0 l) +5

Multiplication - Page 11

- 1) a) 36 b) 80 c) 192 d) 204 e) 336 f) 603 g) 324 h) 666
i) 1431 j) 2268 k) 938 l) 1929 m) 4376 n) 2725 o) 2247
p) 5040 q) 12,150 r) 28,450 s) 14,840 t) 38,700 u) 2241
v) 4230 w) 4898 x) 18,088 y) 5040 z) 34,104
2) 138 3) 304 4) 1800 5) 399 6) 260 7) 432 8) 425
9) 8000 10) 1710

Multiplying Decimals - Page 12

- 1) a) 22.8 b) 51.1 c) 50.4 d) 23.7 e) 79.2 f) 31.71
g) 34.65 h) 27.65 i) 6.56 j) 54.18 k) 35 l) 282 m) 261.6
n) 220 o) 341.1 p) 8.5 q) 29.76 r) 21.66 s) 51.3 t) 31.28
u) 16.08 v) 34.54 w) 134.55 x) 332.4 y) 583.49
2) £118.56 3) £11.34 4) a) £81 b) £11.80 c) £92.80
5) 500cm 6) a) 27.36kg b) 27.81kg 7) 327.36km

8) 453.6g

Division - Page 13

- 1) a) 12 b) 15 c) 35 d) 24 e) 24 f) 85 g) 73 h) 62 i) 73
j) 92 k) 209 l) 184 m) 103 n) 56 o) 131 p) 93 q) 128
r) 104 s) 109 t) 123
2) a) 23 r1 b) 28 r1 c) 13 r2 d) 30 r3 e) 42 r1 f) 44 r2
g) 54 r6 h) 51 r6 i) 247 r1 j) 85 r7 k) 105 r5 l) 128 r2
m) 68 r1 n) 69 r1 o) 94 r8
3) a) 13 b) 15 c) 17 d) 22 e) 28 f) 38 r7 g) 31 r9 h) 27
i) 33 r24 j) 28 r4 k) 27 r29 l) 17 r7 m) 22 r29 n) 19 r24
o) 20 r41
4) a) 25 b) 20 c) 500
5) 50 6) a) 28 rows with 16 over b) 12
7) 29 8) 12 9) 24 weeks

Division with Decimals - Page 14

- 1) a) 5.6 b) 4.75 c) 5.4 d) 7.75 e) 5.25 f) 8.2 g) 22.05
h) 8.4 i) 6.75 j) 1.6 k) 0.21 l) 22.1 m) 3.25 n) 5.23
o) 4.55 p) 0.05 q) 14.03 r) 12.5 s) 2.56 t) 0.18 u) 4.51
v) 14.89 w) 56.1 x) 78.59 y) 42.15
2) 27.5 3) £6.25 4) 19p 5) a) 18.4 miles b) 9.2 miles
6) 55p 7) a) 2.8cm b) 5.6cm c) 11.2cm 8) 1.6cm
9) £52.27 10) 5.55cm

Cancelling Fractions - Page 15

Exercise 1

- 1) $\frac{1}{3}$ 2) $\frac{2}{5}$ 3) $\frac{1}{2}$ 4) $\frac{1}{4}$ 5) $\frac{1}{2}$ 6) $\frac{3}{5}$ 7) $\frac{1}{3}$ 8) $\frac{1}{5}$ 9) $\frac{1}{3}$ 10) $\frac{5}{9}$
11) $\frac{4}{5}$ 12) $\frac{1}{2}$ 13) $\frac{3}{4}$ 14) $\frac{1}{6}$ 15) $\frac{3}{5}$ 16) $\frac{1}{2}$ 17) $\frac{3}{8}$ 18) $\frac{2}{5}$ 19) $\frac{1}{3}$
20) $\frac{1}{3}$ 21) $\frac{3}{10}$ 22) $\frac{3}{20}$ 23) $\frac{2}{5}$ 24) $\frac{1}{10}$ 25) $\frac{1}{7}$ 26) $\frac{9}{20}$ 27) $\frac{3}{4}$
28) $\frac{13}{20}$ 29) $\frac{7}{20}$ 30) $\frac{3}{10}$
31) $\frac{6}{9}$, $\frac{8}{12}$, $\frac{10}{15}$, $\frac{12}{18}$, $\frac{4}{6}$, $\frac{18}{27}$, $\frac{14}{21}$
32) $\frac{2}{5}$, $\frac{4}{5}$, $\frac{1}{5}$, $\frac{3}{5}$ order is $\frac{5}{25}$, $\frac{12}{30}$, $\frac{12}{20}$, $\frac{12}{15}$

Exercise 2

- 1) a) $\frac{9}{20}$ b) $\frac{11}{20}$ 2) $\frac{1}{4}$ 3) $\frac{3}{10}$ 4) $\frac{9}{22}$ and $\frac{13}{22}$ 5) a) $\frac{9}{20}$ b) $\frac{2}{5}$ c) $\frac{3}{20}$

Mixed Fractions - Page 16

Exercise 1

- 1) a) $\frac{3}{5}$ b) $\frac{2}{5}$ 2) a) $\frac{1}{4}$ b) $\frac{3}{4}$ 3) a) $\frac{5}{11}$ b) $\frac{2}{11}$ c) $\frac{1}{11}$ d) $\frac{1}{11}$ e) $\frac{2}{11}$
4) a) $\frac{9}{20}$ b) $\frac{2}{5}$ c) $\frac{3}{20}$

Exercise 2

- 1) no 2) yes 3) $\frac{1}{8}$ 4) 2 5) 2 6) 4 7) $\frac{1}{12}$, $\frac{1}{8}$, $\frac{1}{7}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$
8) $\frac{1}{4}$ 9) $\frac{7}{10}$ 10) a) $\frac{1}{19}$ b) $\frac{18}{19}$ 11) $\frac{6}{31}$ 12) a) $\frac{2}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{12}$

Calculating a Fraction - Page 17

Exercise 1

- 1) 10 2) 5 3) 3 4) 7 5) 5 6) 6 7) 5 8) 10 9) 3 10) 5 11) 4
12) 8 13) 8 14) 10 15) 6 16) 6 17) 2 18) 6 19) 10 20) 5

Exercise 2

- 1) 8 2) 15 3) 9 4) 9 5) 15 6) 15 7) 20 8) 21 9) 20 10) 12
11) 45 12) 25 13) 30 14) 21 15) 14 16) 25 17) 48 18) 56

Exercise 3

- 1) 66.3 2) 2.75 3) 18.75 4) 10.5 5) 18.2 6) 101.01 7) 57.75
8) 7 9) 1.05 10) 3.5 11) 13.2 12) 71.5

Exercise 4

- 1) 24 2) 36 3) 13 and 26 4) a) $\frac{3}{5}$ b) 540 5) £37.50 6) 180
7) a) 22,500 b) 37,500

Calculating Percentages - Page 18

Exercise 1

- 1) £3.40 2) 95p 3) £2.00 4) £7.50 5) £12.15 6) 60p 7) 96p 8) 21p

Exercise 2

- 1) 56 2) 55 3) 68 4) 208 5) 423 6) 140 7) 403 8) 162
9) £13.28 10) £7.36 11) £5.16 12) 56p 13) £12.18 14) £3.42
15) £1.98 16) £3.77

Exercise 3

- 1) 5.61kg 2) 11.04kg 3) 75.66kg 4) 17.16 metres
5) 3.91 metres 6) 18.96 metres 7) 12.462 litres
8) 3.152 litres 9) 7.452 litres 10) 29.986 litres
11) 35.316kg 12) 51.604metres 13) 103.2kg

Exercise 4

- 1) 33 2) 1500 3) a) £42 b) £168 4) a) £1750 b) £26.25
c) £3.50 5) a) £3.60 b) £1.80 c) 90p d) £6.30 e) £42.30

Ratio and Proportion - Page 19

- 1) 8:9 2) £30, £20 and £10 3) a) 90cm b) 150cm
4) a) Second school b) 3:4 c) £150 and £200
5) a) 1:4:5:10 b) 60

Checking - Page 20

- 1) a) $20 \times 30 = 600$ b) $30 \times 40 = 1200$
c) $60 \times 30 = 1800$ d) $50 \times 40 = 2000$
e) $100 \times 50 = 5,000$ f) $300 \times 50 = 15,000$
g) $500 \times 30 = 15,000$ h) $60 \times 200 = 12,000$
i) $80 \times 200 = 16,000$ j) $400 \times 60 = 24,000$
k) $500 \times 60 = 30,000$ l) $200 \times 400 = 80,000$
m) $200 \times 200 = 40,000$ n) $90 \times 400 = 36,000$
o) $400 \times 100 = 40,000$ (ii) (iii) (v) (vi) (viii)
2) These are suggested estimates. Others are acceptable.
a) $150 \div 8$ b) $350 \div 7 = 50$ c) $600 \div 6 = 100$
 $160 \div 8 = 20$
d) $900 \div 4 = 225$ e) $500 \div 9$ f) $360 \div 12 = 30$
 $500 \div 10 = 50$
g) $620 \div 20 = 31$ h) $700 \div 24$ i) $730 \div 14$
 $700 \div 25 = 28$ $750 \div 15 = 50$
j) $800 \div 37$ k) $700 \div 50 = 14$ l) $500 \div 60$
 $800 \div 40 = 20$ $500 \div 50 = 10$
m) $700 \div 20 = 35$ n) $1800 \div 60 = 30$ o) $1400 \div 100 = 14$
3) (i), (ii), (v), (ix)

Inverse Operations - Page 21

- 1) a, b, d, g, h, k and l are wrong
2) b, e, f, h and j
3) $150 + 90 = 240$ 4) $23 \times 12 = 276$ 5) $£5.50 \times 27 = £148.50$
6) $199 - 123$ or $199 - 76$ 7) 26 centimetres

Adding Letters - Page 22

- 1) a) $2g + 2f$ or $2f + 2g$ b) $2w + 2v$ or $2v + 2w$ c) $4x$
2) a) $r + s + t$ b) $5w + 2x$ c) $5f + e + g + h$

Adding Letters and Numbers - Page 23

- 1) a) $a + b + 15$ b) $2w + y + 17$ c) $h + k + n + 27.7$
2) a) 4d b) 8d c) 12d d) 8d

Perimeters of Tiles - Page 24

- 1) a) 16x b) $16x = 32$ c) $x = 2\text{cm}$
2) a) 26y b) $26y = 260$ c) $y = 10\text{cm}$ d) 20cm by 10cm

Simplifying Expressions - Page 25

- 1) a) 7a b) 9y c) 4x d) 2n e) 4n f) 4p g) 9y h) 0 i) 3s j) 0
k) 2a l) 1 m) p^2 n) r^3 o) 2z p) 5n
2) a) $4p + 5$ b) $6r + 4$ c) $4a + 11$ d) $2b - 2$ e) $2n + 2$ f) $12k - 2$

- g) $2c + 13$ h) $9d - 5$ i) $2t + 10s$
3) a) $2 \times n$ and $2n$ b) $n + 2$ c) n^3 d) $\frac{n}{2}$ e) $n \div n$ f) n^2
g) $2n - n$ and n h) $2 \times n$ and $2n$ i) $n \div n$
4) a) $n \div n$ and 1 b) n^2 and $n \times n$ c) $n + 2$ and $2 + n$ d) $n \div 2$ and $\frac{n}{2}$ e) $2n$ and $n + n$ f) $2n - n$ and n

Brackets - Page 26

- 1) a) 4 b) 27 c) 12 d) 42 e) 28 f) 16 g) -4 h) -16 i) -3
j) -30 k) 0 l) -4
2) a and g b and f c and d e and k h and l i and j
3) a) $2x - 6$ b) $10n - 30$ c) $6x - 8$ d) $9n - 15$ e) $24x + 18$
f) $8y + 12y^2$ g) $18b - 2b^2$ h) $6c^2 + 21c$ i) $x^2 + 4x$
j) $6f - 4f^2$ k) $4y - 2y^2$ l) $6x - 2x^2$
4) a) $4x + 5$ b) $6x + 2$ c) $7y + 3$ d) $7a - 2$ e) $5b + 2$
f) $10a - 10$ g) $10d + x$ h) $7x - 7$ i) $5y + x$ j) $5x - 7$
k) $7y - 5$ l) $4x + 4$ m) $3 + a$ n) $3b + 2a - 11$ o) $3b + 2a + 1$
5) a) 9 b) 9 c) 16 d) 10 e) 5x f) 10y g) 10a h) 9b i) $4a + 3$
j) $9 + 2b$ k) $7 + 5b$ l) $8 + 4y$
6) a) $5 - (-3) = 8$ b) $12 - (-4) = 16$ c) $7 - (-7) = 14$
d) 1 e) 3 f) -6 g) 0 h) 18 i) 5 j) $-4 - 2 = -6$ k) 11
l) $-4 - (-2) = -2$
7) a) 2a b) $5x + 2$ c) $3y - 2$ d) $3b + 7$ e) $5y + 7$ f) $4x + 7$
g) $2b + 7$ h) $6y - 1$ i) $-2a - 4$ j) $2 + 6y$ k) $3 + 11b$
l) $-3 + 4y$ or $4y - 3$

Number Rules - Page 27

- a) $n + 3$, $n + 4$, $n + 5$
b) 10, 12, $n + 4$, $n + 6$, $n + 8$, $n + 10$
c) 18, 21, $3n$, $4n$, $5n$, $6n$, $7n$ (in centre)
d) 32, 48, 96, $2n$, $4n$, $8n$, $32n$
e) 7, 16, 22, $n - 3$, $n + 3$, $n + 6$

Number Grids - Page 28

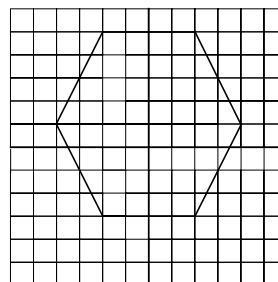
1)	14	15	24	25	78
	28	29	38	39	134
	66	67	76	77	286
	87	88	97	98	370
	115	116	125	126	482
	n	n + 1	n + 10	n + 11	4n + 22
2)	22	23	24	33	102
	27	28	29	38	122
	61	62	63	72	258
	78	79	80	89	326
	96	97	98	107	398
	n - 11	n - 10	n - 9	n	4n - 30

Number Patterns - Page 29

- 1) a) 13 b) 31 c) multiply the number of squares by 3 then add 1 d) $m = 3s + 1$ e) 103 f) 20 g) 24 with 2 over
2) a) 12 b) 27 c) subtract 1 from the number of pots then multiply by 3 d) $r = 3(p - 1)$ e) 72 f) 23

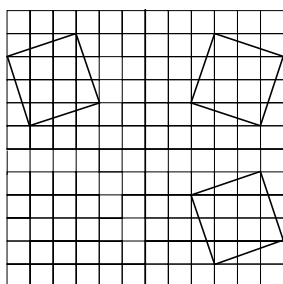
Negative Co-ordinates - page 30

- 1) a)



- b) Hexagon c) The y axis or $x = 0$

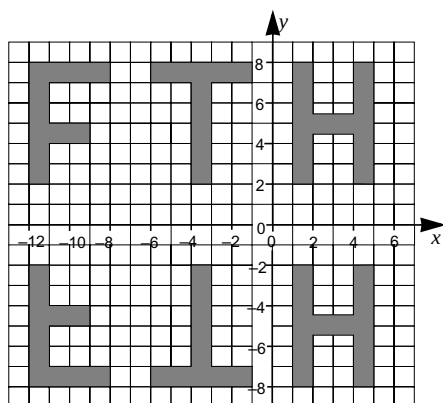
2) a)



b) $(-2,2)$ $(-3,5)$ $(-6,4)$ $(-5,1)$

c) $(2,-2)$ $(3,-5)$ $(6,-4)$ $(5,-1)$

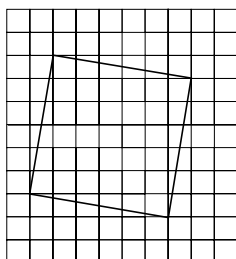
3) a)



b) $(-1,-7)$ $(-1,-8)$ $(-6,-8)$ $(-6,-7)$

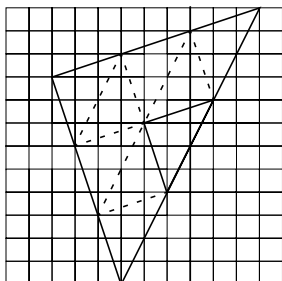
$(-4,-7)$ $(-4,-2)$ $(-3,-2)$ $(-3,-7)$

4) a)



b) $(-6,-3)$

5) a) c) e)



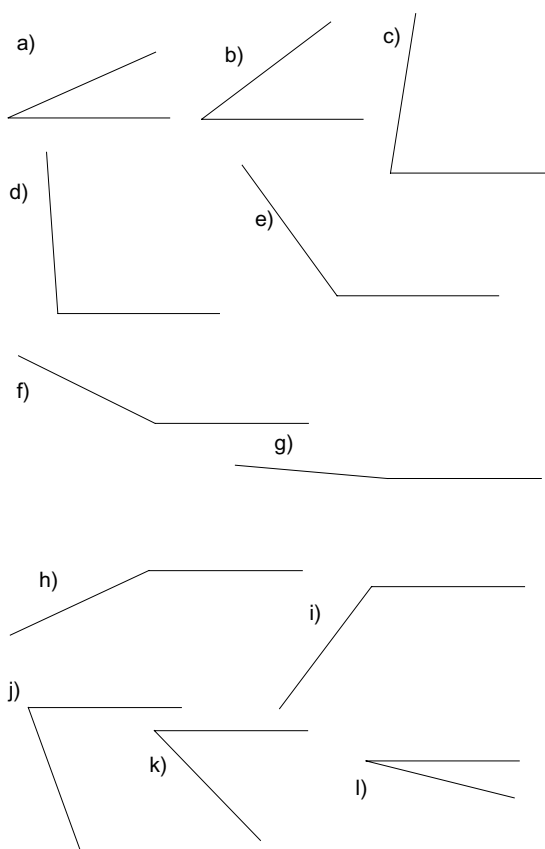
b) $(3,6)$ and $(-3,-6)$ d) 9

Angles - page 31

1) $A = 72^\circ$ $B = 150^\circ$ $C = 45^\circ$ $D = 114^\circ$ $E = 21^\circ$ $F = 36^\circ$

$G = 276^\circ$ $H = 305^\circ$ $I = 331^\circ$

2)



Triangles - Page 32

a) 67° b) 72° c) 39° d) 59° e) 121° f) 39° g) 27° h) 39°

i) 63°

Angles at a Point - Page 33

a) 117° b) 40° c) 49° d) 131° e) 99° f) 130° g) 144° h) 118°

i) 70° j) 47° k) 61° l) 77° m) 48°

Drawings - Page 34

See separate sheet

Making Shapes - Page 35

1) a, c, e and f

2) a, b, d and e

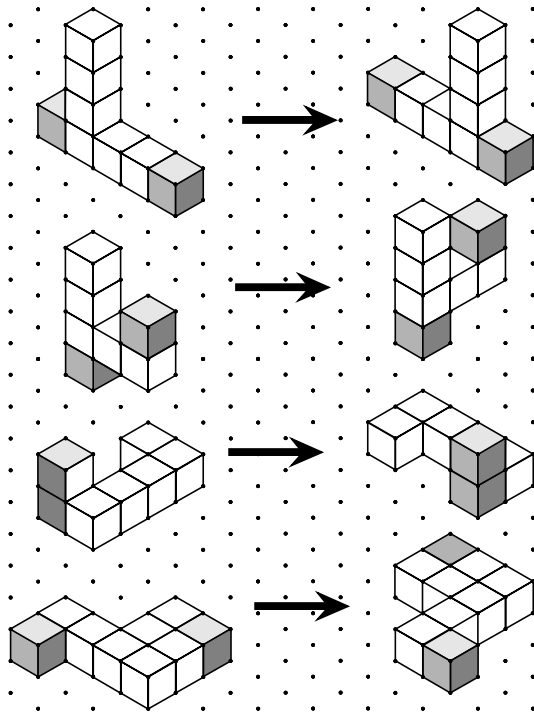
3) f and c a, j and m n, e and b l and i

Packages - Page 36

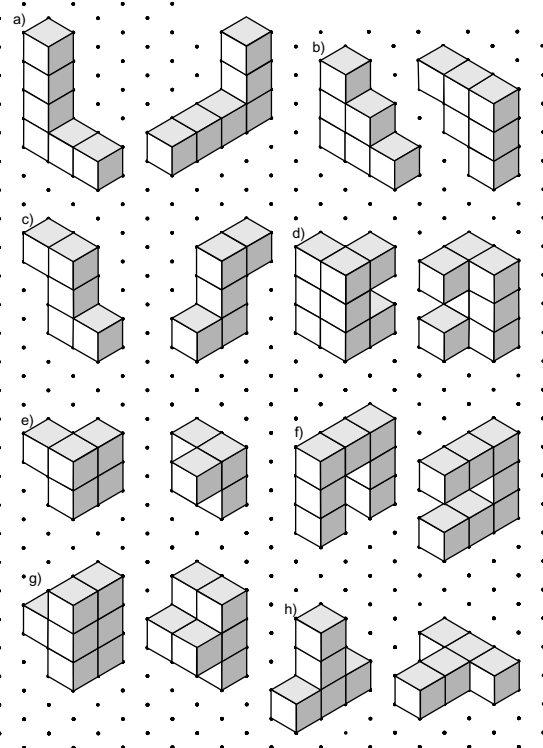
1) a) Hexagon b) a, b, c, d, e, f and g

2) a) 9 b) d c) 6 3) b and c

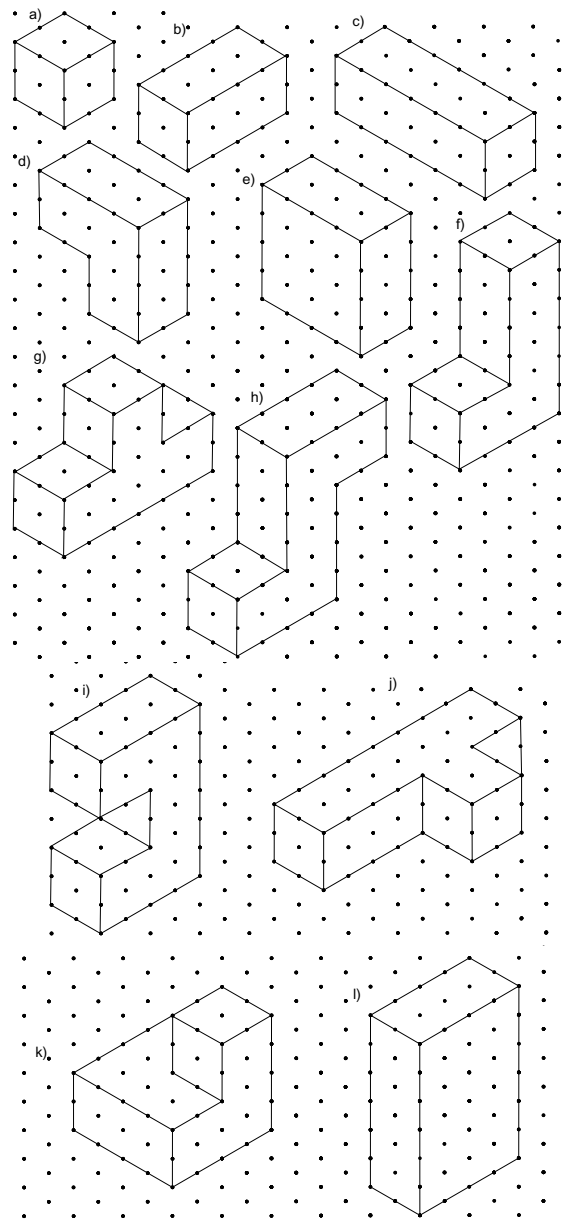
Missing Blocks - Page 37



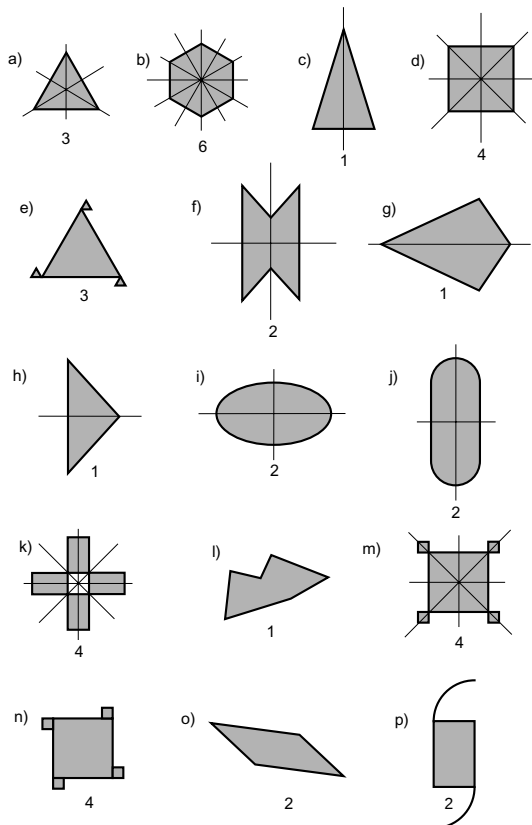
3-D Shapes - Page 38



Enlargements - Page 39



Rotational Symmetry - Page 40



Metric and Imperial Measure - Page 41

- 1) a) 5 litres b) 4.5 litres
- 2) 250g of butter
250g of sugar
400g of flour
2 eggs
125ml
- using 1oz = 25g and 1 pint = 0.5 litre
- 3) 336, 464, 624, 168 using 1 mile = 1.6km
- 4) a) 2lbs b) 2.2lbs
- 5) a) 30cm b) 2.5cms c) 160cms
- 6) 5kg 7) 4 litres

Estimating Measures - Page 42

- 1) a) miles, kilometres b) cm c) kg d) seconds e) grams
f) gallons, litres g) cms h) millimetres i) ml
- 2) a) 200 - 500 b) 50 - 300 c) 4 - 15 d) 40 - 100kg, 30 - 60kg
- e) 30 - 150litres f) 10 - 40 minutes, 2 - 5 minutes g) 4 - 12
- h) 3 - 10 metres i) 3hrs - 6hrs

Area and Perimeter - Page 43

- 1) a) 40cm, 96cm² b) 34cm, 52cm² c) 41cm, 103.5cm²
- d) 40cm, 66cm² e) 44cm, 101cm² f) 49cm, 135cm²
- g) 60cm, 110cm²
- 2) a) 20,774 b) 2.0774 3) £4480 4) £684 5) 100

Mean - Page 44

- 1) a) 6.6 b) 4.46, 6.9 c) 344, 10
- 2) a) 5+8+5+9+8+2+7+4+9+10+12+4+0+8
Mean = 766.5
b) 1+4+8+3+4+2+3+5+1+8
Mean = 603.9
- 3) a) 35 b) 6 c) 14
- 4) a) 5, 4 b) 6 and 3

Rainfall - Page 45

- a) Sydney b) July c) April c) Sydney - its total rainfall for the year is greater than that of New York.
- e) 3cm f) Approx. 6.5cm g) March, April and May
- h) July, August and September
- i) September, October and November j) April, May and June.

Youth Club - Page 46

- a) Tuesday b) 52 c) 53 d) 16 e) 14 f) 5 years (from the beginning of age 11 to the end of age 15 is 5 years) g) 14
- h) Ranges remain the same. The mode of the Tuesday club changes from 16 to 15

Moving - Page 47

- 1) a) 11:45 (approx) b) (i) 8:00 and 10:00 (ii) 30mins and 45mins c) 40 miles and 115 miles (approx) 2) a) Martin
- b) Simon takes the lead c) 50 seconds d) Martin, 85 seconds

Percentage Bars - Page 48

- 1) a) Labour b) Conservative c) Labour and Liberal Democrat d) 44% e) Labour share went down by about 11%. The actual Labour vote went down by about 25%
- 2) a) Helen b) Jane c) 34% d) 15% e) Jane gives about 62sq m and Helen gives about 125sq m

Reading Pie Charts - Page 49

- 1) a) Crisps b) Juice c) Sweets and Chocolate d) Crisps
- 2) a) D b) A - red or black, B - white, C - black or red, E - blue
- c) 120 d) 40

Comparing Pie Charts - Page 50

- 1) a) Oak b) The diagram shows only the proportion of Ash trees on each farm. If there are more trees on farmer Williams' farm there could be a larger number of Ash trees than on farmer Jones' farm. A small proportion of a large number can be bigger than a large proportion of a small number.
- c) Farmer Williams has more trees on his land.
- 2) a) More people went to the cinema on Saturday than on Monday. b) Lots more on Saturday. This is probably because children are off school on Saturday and not on Monday

Chances - Page 51

- 1) 0 0.25 0.5 0.75 1
Impossible Poor Even Good Certain
- 2) $\frac{1}{2}$, 0.5, 50%
- 3) No. It is expected that over a large number of tosses there would be about the same number of heads and tails. Sometimes it happens with a small number of tosses but not always.
- 4) a) Car. There have been more cars passing than any other vehicle.
b) Bus. There have been fewer buses passing than any other vehicle.
- 5) a) $\frac{3}{10}$ or 0.3 or 30% b) $\frac{1}{2}$ or 0.5 or 50%

Taking a Chance - Page 52

- 1) a) White b) $\frac{5}{12}$ c) $\frac{7}{12}$ d) $\frac{7}{12}$
- 2) a) 7 b) $\frac{1}{6}$ c) Because there are the same number of 3's and 4's on the dice. i.e. 1 of each. d) $\frac{2}{3}$
- 3) a) $\frac{1}{8}$ b) $\frac{1}{2}$ c) $\frac{1}{4}$ d) $\frac{3}{4}$ e) $\frac{3}{8}$

Spinners - Page 53

- 1) $\frac{1}{5}$ b) $\frac{1}{6}$ c) Getting a 5 on spinner 1 is more likely. There are fewer numbers on spinner 1 than on spinner 2 thereby increasing the probability
2) The spinner has 3 fours, 2 threes, 2 twos and 1 one.
3) a) 9 b) $\frac{1}{9}$ c) $\frac{2}{9}$ d) $\frac{1}{3}$

Take a Card - Page 54

- 1) a) $\frac{4}{9}$ b) $\frac{1}{9}$ c) $\frac{8}{9}$ d) 3 e) 3 f) Because there are not an equal number of outcomes for each total.
2) a) $\frac{1}{8}$ b) $\frac{5}{8}$ c) $\frac{1}{8}$

Different Outcomes - Page 55

- 1) a) $\frac{1}{6}$ b) 10 times c) by dividing the number of times the number occurs by 60 d) $\frac{9}{60} = \frac{3}{20}$ e) 100 f) $\frac{4}{25}$ g) One way is to compare fractions like this:-

Theoretical is $\frac{1}{6} = \frac{100}{600}$

Damian's is $\frac{3}{20} = \frac{90}{600}$

Dawn's is $\frac{4}{25} = \frac{96}{600}$

Dawn's is closer to the theoretical value than Damian's.

- 2) a) He divides the number of lorries by the number of vehicles. b) 0.10, 0.125, 0.15, 0.064 c) She divides the total number of lorries by the total number of vehicles.
d) Yes. 0.09856.... is very close to 0.1. It is therefore a very good approximation.

Trial and Improvement - Page 56

- 1) a) 8cm^2 b) 28mm (When the areas are the same, the length of the side is between 2.8 and 2.85, so 28mm is the nearest)
2) When the difference is 0, the value of x will be between 2.75 and 2.8. therefore 2.8 is the nearest value correct to 1 decimal place.

Negatives - Page 57

- 1) -4 2) 6 3) -5 and 6 4) 12 and -4 5) -7 6) a) +1 b) +1 c) +4 d) +6 e) 0 f) -3 g) -7

Fraction Problems - Page 58

- 1) a) £28 b) £56 2) a) $\frac{3}{5}$ b) $\frac{2}{5}$ c) £150 d) £100 3) a) $\frac{1}{16}$ b) $\frac{1}{18}$ 4) a) $\frac{5}{8}$ b) 250 5) a) 1,500km b) $\frac{7}{15}$ c) $\frac{8}{15}$ d) $\frac{4}{15}$ e) 600, 500, 400km 6) a) 1,500 litres b) $\frac{1}{2}$ c) 3,200 litres

Percentage Calculations - Page 59

- 1) a) 82% b) 451 2) a) £37.50 b) £87.50 c) 6% d) 7.5% 3) a) 55% b) 45% c) £330 d) £270 4) a) 1500km b) 40% c) 60% d) 37% e) 420, 525, 555 5) a) 1650 b) 65% c) 9020

Fractions, Decimals and Percentages - Page 60

- 1) a) 80% b) 40% c) 70% d) 65% e) 74% f) 94% g) 34.5% h) 5% i) 53.2% j) 4.3% k) 2.1% l) 3% m) 6.3% n) 90.4%
2) a) $\frac{1}{2}$ b) $\frac{3}{5}$ c) $\frac{3}{4}$ d) $\frac{1}{4}$ e) $\frac{1}{3}$ f) $\frac{2}{3}$ g) $\frac{3}{20}$ h) $\frac{9}{20}$ i) $\frac{7}{20}$ j) $\frac{18}{25}$ k) $\frac{91}{100}$ l) $\frac{6}{25}$ m) $\frac{16}{25}$ n) $\frac{5}{8}$ o) $\frac{23}{40}$
3) a) 0.5 b) 0.25 c) 0.2 d) 0.125 e) 0.1 f) 0.01 g) 0.005 h) 0.02
4) a) 0.4, 40% b) 0.6, 60% c) 0.75, 75% d) 0.3, 30% e) 0.03, 3% f) 0.25, 25% g) 0.025, 2.5% h) 0.2, 20% i) 0.7, 70% j) 0.15, 15% k) 0.45, 45% l) 0.375, 37.5%

- m) 0.075, 7.5% n) 0.65, 65% o) 0.04, 4% p) 0.92, 92%

- 5) a) 0.375, $\frac{3}{8}$, $37\frac{1}{2}\%$, 0.3750 b) $\frac{3}{5}$, 0.600, 60%, 0.6

- c) 0.27, $\frac{27}{100}$, 27%, $\frac{54}{200}$ d) 36%, $\frac{9}{25}$, 0.36, $\frac{18}{50}$

- 6) a) $\frac{3}{20}$ b) $\frac{1}{9}$ c) $\frac{3}{17}$ d) $\frac{9}{20}$

Ratios - Page 61

- 1) a) 1:3:4:6 b) 1:6:7:11 c) 28%
2) a) 3:5:12 b) 3:4:3 c) 30%
3) a) 1:2:4:10 b) 95 c) 1:3:2:13

Adding and Subtracting Fractions - Page 62

- 1) a) $\frac{3}{4}$ b) $1\frac{1}{4}$ c) $\frac{1}{4}$ d) $1\frac{1}{4}$ e) $2\frac{1}{4}$ f) 1 g) $\frac{1}{2}$ h) $1\frac{1}{2}$ i) 1 j) $\frac{3}{4}$
k) $6\frac{3}{4}$ l) 6 m) $3\frac{3}{4}$ n) $\frac{3}{4}$ o) $5\frac{1}{4}$ p) $\frac{3}{4}$
2) a) $\frac{4}{5}$ b) $\frac{7}{10}$ c) $\frac{7}{8}$ d) $\frac{5}{6}$ e) $\frac{3}{20}$ f) $\frac{7}{10}$ g) $\frac{7}{10}$ h) $\frac{5}{16}$ i) $\frac{7}{12}$
j) $\frac{4}{15}$ k) $\frac{4}{21}$ l) $\frac{13}{18}$ m) $\frac{7}{24}$ n) $\frac{16}{17}$ o) $\frac{11}{15}$ p) $\frac{9}{10}$
3) a) $\frac{1}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{4}$ d) $\frac{1}{2}$ e) $\frac{1}{5}$ f) $\frac{1}{4}$ g) $\frac{1}{2}$ h) $\frac{1}{3}$ i) $\frac{2}{3}$ j) $\frac{5}{12}$ k) $\frac{3}{10}$
4) a) $\frac{4}{20}$ and $\frac{16}{20}$ b) $\frac{3}{12}$ and $\frac{2}{12}$ c) $\frac{5}{15}$ and $\frac{12}{15}$ d) $\frac{5}{10}$ and $\frac{8}{10}$
e) $\frac{15}{20}$ and $\frac{4}{20}$ f) $\frac{8}{28}$ and $\frac{21}{28}$ g) $\frac{8}{18}$ and $\frac{9}{18}$ h) $\frac{6}{36}$ and $\frac{8}{36}$
i) $\frac{6}{33}$ and $\frac{11}{33}$ j) $\frac{15}{21}$ and $\frac{4}{21}$ k) $\frac{21}{30}$ and $\frac{4}{30}$ l) $\frac{9}{48}$ and $\frac{20}{44}$
5) a) $\frac{13}{15}$ b) $\frac{7}{8}$ c) $\frac{8}{9}$ d) $\frac{11}{20}$ e) $\frac{11}{40}$ f) $\frac{4}{5}$ g) $\frac{3}{14}$ h) $\frac{11}{20}$ i) $\frac{23}{24}$ j) $\frac{19}{28}$
6) a) $\frac{8}{15}$ b) $\frac{1}{2}$ c) $\frac{3}{4}$ d) $\frac{13}{16}$ e) $\frac{5}{14}$ f) $\frac{49}{60}$ g) $\frac{7}{36}$ h) $\frac{11}{36}$ i) $\frac{1}{5}$ j) $\frac{41}{60}$

More Fractions - Page 63

- 1) a) $1\frac{3}{20}$ b) $1\frac{1}{10}$ c) $1\frac{3}{20}$ d) $1\frac{1}{16}$ e) $1\frac{9}{28}$ f) $1\frac{9}{20}$ g) $1\frac{1}{10}$
h) $1\frac{3}{14}$ i) $1\frac{13}{44}$ j) $1\frac{11}{50}$ k) $1\frac{13}{30}$ l) $1\frac{1}{3}$ m) $1\frac{4}{33}$ n) $1\frac{2}{5}$
o) $1\frac{3}{16}$ p) $1\frac{1}{5}$ q) $1\frac{3}{14}$ r) $1\frac{1}{5}$ s) $1\frac{5}{24}$ t) $1\frac{2}{9}$
2) a) $2\frac{2}{15}$ b) $\frac{17}{20}$ c) $1\frac{17}{20}$ d) $1\frac{1}{2}$ e) $2\frac{11}{20}$ f) $2\frac{19}{20}$ g) $2\frac{3}{20}$ h) $3\frac{1}{3}$
i) $4\frac{23}{44}$ j) $1\frac{1}{40}$ k) $4\frac{3}{4}$ l) $1\frac{7}{30}$ m) $3\frac{23}{33}$ n) $1\frac{1}{2}$ o) $1\frac{15}{16}$ p) $9\frac{1}{15}$
q) $1\frac{2}{15}$ r) $5\frac{4}{5}$ s) $7\frac{1}{6}$ t) $2\frac{21}{22}$
3) From the top, clockwise $\frac{1}{2}$, $\frac{1}{4}$, $\frac{5}{8}$, $\frac{5}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $2\frac{1}{8}$, $\frac{11}{16}$

Numbers for Letters - Page 64

- 1) a) £106 b) £80 c) 6 d) 25 2) a) 54 b) 82 c) 114 d) 268
e) 2 f) 5 g) 6 h) 8 3) a) 14 b) 4 c) 15 d) 20 e) 2 f) 10
g) 2 h) 4 4) a) 50.272 b) 85.94 to 2d.p. c) 6 d) 12.568 She has used $\pi = 3.412$ instead of 3.142

Multiplying a Bracket by a Bracket - Page 65

- 1) a) n^2 , $5n$ and 10 b) $n^2 + 7n + 10$ c) $n^2 + 7n + 10$
2) a) n^2 , $7n$, $4n$, 28 b) $n^2 + 11n + 28$ c) $n^2 + 11n + 28$
3) a) $n^2 + 9n + 18$ b) $n^2 + 12n + 20$ c) $2n^2 + 7n + 6$
d) $3n^2 + 8n + 5$

Finding the Missing Expression - Page 66

- 1) a) 1 b) 3 c) $6a$ d) 10 e) $2y$ f) 1 g) $7p$ h) $4r$ i) $7f$ j) 9
k) $2k$ l) $4m$
2) b) $4b + 5$ c) $3y + 7$ d) $3x + 6$ e) $3y - 4$ f) $3c - 5$ g) $6w - 5$
h) $4 - c$ i) $2w + 7$ j) $3s - 3$ k) $3 - x$ l) $y - 5$ m) $3a - 5$
3) a) $11 - p$, $d + 5$ b) $2d - 7$, $a - 3$ c) $2y - 2$, $3x - 1$ d) $3m$, $n + 1$

Making Magic Squares - Page 67

- 1) a) $n - 4 + n + n + 4 = 3n$
 $n + 1 + n + 2 + n - 3 = 3n$
 $n + 3 + n + n - 3 = 3n$
 $n - 1 + n + 4 + n - 3 = 3n$
 $n - 2 + n + n + 2 = 3n$
 $n + 3 + n - 4 + n + 1 = 3n$
 $n - 1 + n + n + 1 = 3n$

b)

10	5	6
3	7	11
8	9	4

2) a)

$n+1$	$n+4$	$n-5$
$n-6$	n	$n+6$
$n+5$	$n-4$	$n-1$

b)

13	16	7
6	12	18
17	8	11

15	18	9
8	14	20
19	10	13

12	15	6
5	11	17
16	7	10

17	20	11
10	16	22
21	12	15

Tiling Patterns - Page 68

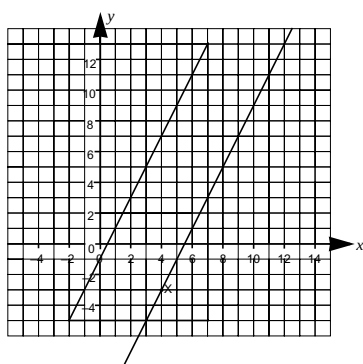
- 1) a) 1 b) 2 c) 24 d) $2n$ 2) a) 4 b) 6 c) 80 d) $10n$ e) 52
 3) a) 2 b) 1 c) 18 d) 8 e) $2n + 2$ f) n g) $3n + 2$

Equations of Parallel Lines - Page 69

- 1) B $y = x + 3$, C $y = x$, D $y = x - 4$, E $y = x - 11$
 2) B $y = \frac{3}{2}x + 4$, C $y = \frac{3}{2}x$, D $y = \frac{3}{2}x - 3$, E $y = \frac{3}{2}x - 9$

Graphs of Equations - Page 70

- 1) a) D b) E c) C d) B e) A f) F
 2) a) $x = 7$, $x = -2$, $y = 13$, $y = -5$ b) $y = 2x - 1$ c)

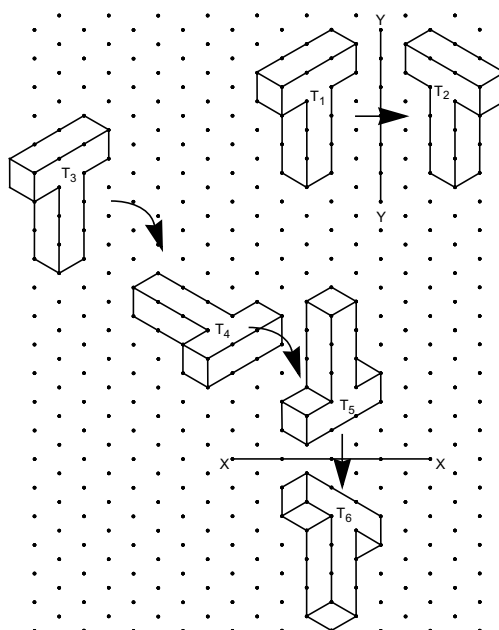


d) $y = 2x - 11$

Viewing Shapes - Page 71

- 1) a) C b) D c) A d) B 2) a) C, D, and B
 b)  c) (ii) and (iii)

Drawing T's - Page 72



Properties of Quadrilaterals - Page 73

- 1) 90° 2) 130° 3) a) 35° b) $17\frac{1}{2}^\circ$ 4) a) 40° b) 70° 5) a) 118°
 b) 71° 6) a) 49° b) 125° 7) a) 30° b) 150°

Angles of Polygons - Page 74

1)

Triangle	3	1	180°	180°
Quadrilateral	4	2	360°	360°
Pentagon	5	3	540°	540°
Hexagon	6	4	720°	720°
Heptagon	7	5	900°	900°
Octagon	8	6	1080°	1080°
Nonagon	9	7	1260°	1260°
	n	$n - 2$	$180(n - 2)$	$180(n - 2)$

2) a) Divide by the number of sides

- b) $\frac{180(n-2)}{n}$ c) (i) 120° (ii) 135° (iii) 144°

Symmetry of Polygons - Page 75

- 1) Hexagon 6 6
 Square 4 4
 Equilateral Triangle 3 3
 Octagon 8 8
 Heptagon 7 7
 Pentagon 5 5

2) a) (i) 135° (ii) 120° (iii) 108°

b) (i) Exterior angle $180^\circ - 135^\circ = 45^\circ$

Interior angle is half of $135^\circ = 67\frac{1}{2}^\circ$

Centre angle is $360^\circ \div 8 \times 2 = 90^\circ$

(ii) Exterior angle $180^\circ - 120^\circ = 60^\circ$

Interior angle is half of $120^\circ = 60^\circ$

Centre angle is $360^\circ \div 6 \times 2 = 120^\circ$

(iii) Exterior angle $180^\circ - 108^\circ = 72^\circ$

Interior angle is half of $108^\circ = 54^\circ$

Centre angle is $360^\circ \div 5 = 72^\circ$

Intersecting and Parallel Lines - Page 76

a 124, b 56, c 124, d 118, e 62, f 118, g 62, h 66, i 114, j 66, k 113, l 47, m 71, n 109, o 109, p 51, q 119, r 39, s 39, t 141.
g) (i) ACB (ii) ABC (iii) They are equal h) (i) c (ii) they are equal (iii) j (iv) They are equal

Computer Instructions - Page 77

- 1) a) 110, 14 b) Forward 42
Turn Right 120
Forward 50
Turn Right 94
Forward 48
Turn Right 110
Forward 28
- 2) a) 130° and 150° b) Forward 5
Turn Right 130
Forward 9.9
Turn Right 150
Forward 7.8
c) Forward 6
Turn Right 120
Forward 6
Turn Right 120
Forward 6

Drawing an Octagon - Page 78

- a) 45°
- b) FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
TURN RIGHT 45
FORWARD 10
- c) REPEAT 8 [FORWARD 10, TURN RIGHT 45]
- d) A regular hexagon
- e) REPEAT 3 [FORWARD 10, TURN RIGHT 120]
- f) REPEAT 4 [FORWARD 10, TURN RIGHT 90]

Area and Circumference of a Circle - Page 79

- 1) a) 78.55cm² b) 314.2cm² c) 1256.8cm²
b) 4 times c) 16 times d) 1:4:16 e) 31.42cm, 62.84cm, 125.68 f) 1:2:4
- 2) a) 6.284m b) Approximately 6.4 revolutions
- 3) a) Approximately 31.8cm b) Approximately 3183cm²
- 4) a) 7m² b) 5m c) 20m² d) 13m²

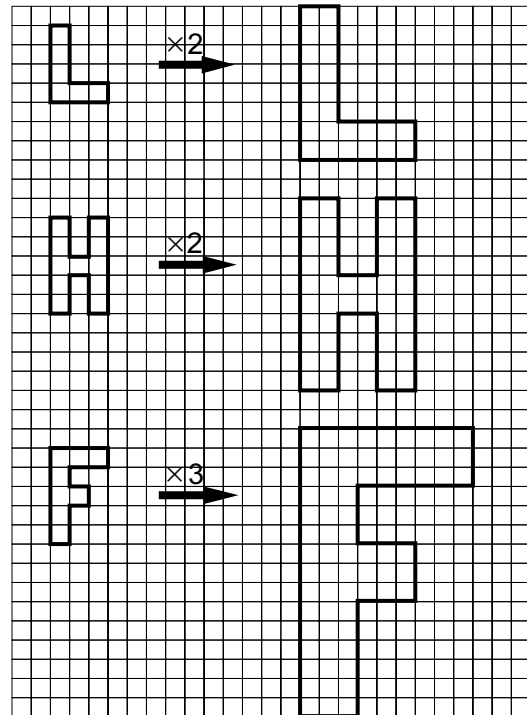
Areas of Rectangles - Page 80

- 1) 4n² + 12n 2) a) 2n and n + 3 b) 2n² + 6n 3) a) 2n + 6 and n b) 2n² + 6n 4) a) 4n² + 12n b) 2n² + 6n c) 2n² + 6n

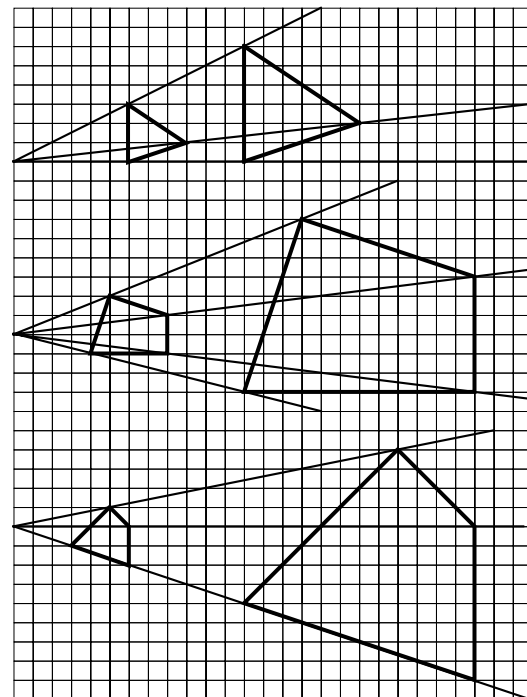
Volumes - Page 81

- 1) (i) a) 150cm³ b) 4032cm³ c) 4335cm³ d) 80cm³
e) 3300cm³ f) 9408cm³ (ii) b, c, e and f.
- 2) 15 litres 3) a) 0.18m and 1.1m b) 2.97m³

Enlarging Letters - Page 82

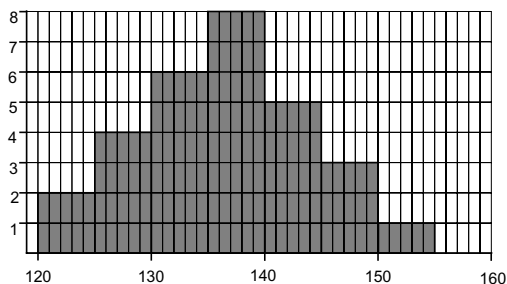


Enlarging Through a Point - Page 83



Continuous Data - Page 84

- a) 29 b) is less than c) is less than or equal to d) h lies between 120 and 125, and includes 120 but does not include 125 e) 145 ≤ h < 150 f) 2 g) 25 h) 9

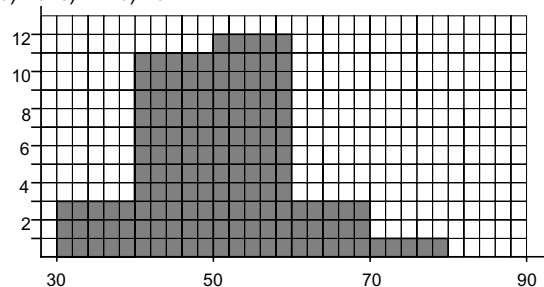


Pupils Weights - Page 85

a)

Weight	Tally	Frequency
$30 \leq w < 40$	///	3
$40 \leq w < 50$	//// //	11
$50 \leq w < 60$	//// //	12
$60 \leq w < 70$	///	3
$70 \leq w < 80$	/	1

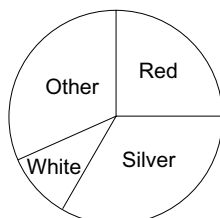
b) 26 c) 27 d) 23



e) 8

Constructing a Pie Chart - Page 86

a)

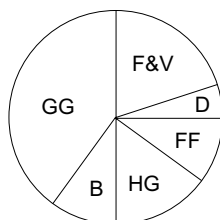


b) 114°

2) a)

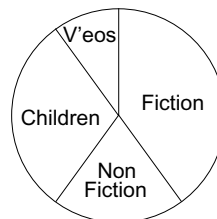
Department	Percentage	Angle needed
Fruit and Vegetables	20%	72°
Delicatessen	5%	18°
Frozen Foods	10%	36°
Household Goods	15%	54°
Butcher	10%	36°
General Groceries	40%	144°

b)



3) a) 144°

b)



Distance and Time - Page 87

1) a) 3rd, 1st and 6th b) 10 seconds c) 25 seconds

2) a) 3 minutes b) 9 minutes c) after 11 minutes d) About 6 minutes and 20 seconds

Scatter Diagrams - Page 88

1) a) (ii) b) (iii) c) (i)

2) a) The more bedrooms a house has, the more windows it has. b) 3 or 4 c) 13

Dice - Page 89

1) a)

		Red Dice					
		1	2	3	4	5	6
Blue Dice	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

b) $\frac{1}{36}$ c) 4,1 3,2 2,3 and 1,4 d) $\frac{1}{9}$ e) $\frac{1}{6}$ f) 7

2) a)

		First Dice						
		+	1	1	1	2	3	4
Second Dice	2	3	3	3	4	5	6	
	2	3	3	3	4	5	6	
	2	3	3	3	4	5	6	
	4	5	5	5	6	7	8	
	5	6	6	6	7	8	9	
	6	7	7	7	8	9	10	

b) $\frac{1}{4}$ c) $\frac{3}{4}$

Choosing - Page 90

1) a)

		Second Ball				
		1	2	3	4	5
First Ball	1		1,2	1,3	1,4	1,5
	2	2,1		2,3	2,4	2,5
	3	3,1	3,2		3,4	3,5
	4	4,1	4,2	4,3		4,5
	5	5,1	5,2	5,3	5,4	

b) 20 c) $\frac{1}{10}$ d) $\frac{9}{10}$

- 2) a) R,W R,B B,W b) $\frac{1}{3}$ c) $\frac{2}{3}$ 3) a) $\frac{3}{4}$ b) 3 c) 2 d) 5
e) 12

On the Road - Page 91

- 1) a) egg, bacon, beans
egg, bacon, tomatoes
bacon, beans, tomatoes
egg, beans, tomatoes
b) egg, egg, bacon bacon, bacon, egg
egg, egg, beans bacon, bacon, beans
egg, egg, tomatoes bacon, bacon, tomatoes
tomatoes, tomatoes, egg beans, beans, egg
tomatoes, tomatoes, bacon beans, beans, bacon
tomatoes, tomatoes, beans beans, beans, tomatoes
c) 20 (with the addition of 4 lots of 3 of the same)
2) bacon, beans, tomatoes
bacon, toast, tomatoes
beans, toast, tomatoes
egg, toast, tomatoes
3)

	Probability of breaking down	Probability of not breaking down
1 year old car	0.002	0.998
2 year old car	0.01	0.99
3 year old car	0.017	0.983

- 4) a) 0.54 b) 0.32

