

UNIT 3 ANSWERS

UNIT 3: NUMBER 3

EXERCISE 1

- 1 ▶ 7, 14, 21, 28, 35
 2 ▶ 6, 12, 18, 24, 30
 3 ▶ 1, 2, 3, 4, 6, 12
 4 ▶ 1, 2, 3, 6, 9, 18
 5 ▶ 1, 2, 3, 5, 6, 10, 15, 30
 6 ▶ $2 \times 2 \times 7$
 7 ▶ $2 \times 5 \times 7$
 8 ▶ $2 \times 2 \times 3 \times 5$
 9 ▶ $2 \times 2 \times 2 \times 2 \times 2 \times 3$
 10 ▶ $n = 4$
 11 ▶ a $2^2 \times 3^2 \times 7$ b $2^3 \times 3^3 \times 7$
 12 ▶ 6 mm by 6 mm

EXERCISE 1*

- 1 ▶ 5, 10, 15, 20, 25
 2 ▶ 9, 18, 27, 36, 45
 3 ▶ 13, 26, 39, 52, 65
 4 ▶ 1, 3, 5, 15, 25, 75
 5 ▶ 1, 2, 4, 5, 8, 10, 20, 40
 6 ▶ 1, 2, 3, 6, 9, 18, 27, 54
 7 ▶ $3 \times 5 \times 7 \times 11$
 8 ▶ a $3 \times 7 \times 19$ b $2^2 \times 3^3 \times 7 \times 19$
 9 ▶ $2^3 \times 3 \times 7$; $2^6 \times 3^2 \times 7^2$
 10 ▶ a $60 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3 \times 5$
 b $60 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3 \times 5$
 c $48 = 2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3$
 11 ▶ 200 cm
 12 ▶ 168

EXERCISE 2

- 1 ▶ 2 2 ▶ 5 3 ▶ 22
 4 ▶ 6 5 ▶ 30 6 ▶ 30
 7 ▶ 9 bags each with 2 chocolates and 3 mints
 8 ▶ LCM is 45 and 75 is 225 mins so 12:45
 9 ▶ $2x$ 10 ▶ $4y^2$ 11 ▶ $6ab$
 12 ▶ $12xy$

EXERCISE 2*

- 1 ▶ HCF = 6 2 ▶ HCF = 15
 LCM = 36 LCM = 210
 3 ▶ HCF = y 4 ▶ HCF = $2xy$
 LCM = $6xyz$ LCM = $12xy$
 5 ▶ HCF = xy 6 ▶ HCF = xy
 LCM = x^2yz LCM = x^3y^4

7 ▶ $HCF = 3xyz$
 $LCM = 18x^2y^2z^2$

8 ▶ 12, 15, 120 9 ▶ 420, 924

- 10 ▶ a 300 mins
 b Next possible is 600 mins which is too long for a school day
 11 ▶ 1920 secs or 32 mins
 12 ▶ 42 parcels each containing 6 tins of beans, 4 chocolate bars and 7 packets of soup

EXERCISE 3

- 1 ▶ \$45 : \$75 2 ▶ 111 ml
 3 ▶ 30° , 60° , 90° 4 ▶ \$32
 5 ▶ a 11.5 : 1 b The first school
 6 ▶ Julie (Julie uses 5 parts water to 1 part squash. Hammad uses 5.7 parts water)
 7 ▶ £84
 8 ▶ a 5 : 2 b 22.5 g resin
 c 4.8 g hardener

EXERCISE 3*

- 1 ▶ €50 : €300 2 ▶ 519 g
 3 ▶ 256 tonnes : 192 tonnes : 128 tonnes
 4 ▶ 1 mg
 5 ▶ a $\frac{25}{3} : 1$ or 8.3333... : 1
 b 637 customers to 70 staff gives a ratio of 9.1 : 1, so the store with 70 staff has more customers per staff member.
 6 ▶ Jon 7 ▶ £20 400
 8 ▶ a 5 : 2 or 2.5 : 1 or 1 : 0.4
 b 24 kg c 187.5 kg

EXERCISE 4

REVISION

- 1 ▶ $2^2 \times 3^3 \times 7$ 2 ▶ 6, 72
 3 ▶ 12 cm by 12 cm 4 ▶ 30
 5 ▶ 168 cm
 6 ▶ a $\frac{4}{7}$ b $\frac{3}{7}$
 c Carlotta £200, Hannah £150
 7 ▶ 350 students

EXERCISE 4*

REVISION

- 1 ▶ $2^4 \times 3^2 \times 7$ 2 ▶ 6, 720
 3 ▶ 144, 216 4 ▶ 180 seconds
 5 ▶ 15, each with 5 pink, 7 yellow and 3 white
 6 ▶
- | Size | Blue | Red | White |
|-----------|------|---------|---------|
| 1 litre | 0.1 | 0.1875 | 0.7125 |
| 2.5 litre | 0.25 | 0.46875 | 1.78125 |
- 7 ▶ a 300 : 1 b 81 cm

EXAM PRACTICE: NUMBER 3

- 1 ▶ $2 \times 3 \times 5^2 \times 7$
 2 ▶ 18, 252
 3 ▶ a 120 questions
 b 4 tests
 4 ▶ 84
 5 ▶ Ben £315, Terry £120, Anne £105
 6 ▶ a 1:5 b 9.6 litres

UNIT 3: ALGEBRA 3

EXERCISE 1

- 1 ▶ $x(x+3)$ 2 ▶ $x(x-4)$
 3 ▶ $5(a-2b)$ 4 ▶ $x(y-z)$
 5 ▶ $2x(x+2)$ 6 ▶ $3x(x-6)$
 7 ▶ $ax(x-a)$ 8 ▶ $3xy(2x-7)$
 9 ▶ $3pq(3p+2)$ 10 ▶ $a(p+q-r)$
 11 ▶ $a^2x^2(1+ax)$ 12 ▶ $2ab(2b^2+3a)$

EXERCISE 1*

- 1 ▶ $5x^3(1+3x)$
 2 ▶ $3x^2(x-6)$
 3 ▶ $3x^2y^2(3x-4y^2)$
 4 ▶ $x(x^2-3x-3)$
 5 ▶ $\pi(r+2h)$
 6 ▶ $ab(c^2-b+ac)$
 7 ▶ $4pq(pqr^2-3r+4q)$
 8 ▶ $3x(10x^2+4y-7z)$
 9 ▶ $0.1h(2h+g-3g^2h)$
 10 ▶ $\frac{xy(2x^2-4y+xy)}{16}$
 11 ▶ $4pqr(4pr^2-7-5p^2q)$
 12 ▶ $(a+b)(x+y)$
 13 ▶ $(x-y)^2(1-x+y)$
 14 ▶ $x^2(x+3)(x+5)$

EXERCISE 2

- 1 ▶ $x+1$ 2 ▶ $1-a^2$
 3 ▶ $\frac{(x+y)}{z}$ 4 ▶ $\frac{(a-b)}{c}$
 5 ▶ 2 6 ▶ 5
 7 ▶ $\frac{(a-b)}{b}$ 8 ▶ $\frac{(x+y)}{y}$
 9 ▶ $\frac{t}{r}$ 10 ▶ $\frac{a}{z}$
 11 ▶ $\frac{x}{z}$ 12 ▶ $\frac{a}{c}$

EXERCISE 2*

- 1 ▶ $x+y$ 2 ▶ $3a+b$
 3 ▶ $\frac{1}{z+1}$ 4 ▶ $\frac{2}{m-2}$
 5 ▶ $2+3x^2$ 6 ▶ $\frac{2}{3}(x-3y^2)$

7 ▶ y
 10 ▶ $\frac{b}{a}$

8 ▶ $\frac{2x}{z}$
 11 ▶ 5

9 ▶ 1
 12 ▶ $-x$

EXERCISE 3

- 1 ▶ $x=8$ 2 ▶ $x=-10$
 3 ▶ $x=2$ 4 ▶ $x=0$
 5 ▶ $x=-6$ 6 ▶ $x=5$
 7 ▶ $x=-4$ 8 ▶ $x=6$
 9 ▶ $x=14$ 10 ▶ $x=3$
 11 ▶ $x=0$ 12 ▶ $x=0$
 13 ▶ $x=10$ 14 ▶ 6 km

EXERCISE 3*

- 1 ▶ $x=9$ 2 ▶ $x=\frac{3}{5}$
 3 ▶ $x=9$ 4 ▶ $x=-6$
 5 ▶ $x=0$ 6 ▶ $x=\frac{1}{9}$
 7 ▶ $x=3$ 8 ▶ $x=-1$
 9 ▶ $x=5.6$ 10 ▶ $x=-\frac{5}{13}$
 11 ▶ $x=7$ 12 ▶ 84 years

EXERCISE 4

- 1 ▶ $x=2$ 2 ▶ $x=-3$
 3 ▶ $x=\frac{3}{5}$ 4 ▶ $x=-8$
 5 ▶ $x=10$ 6 ▶ $x=-2.4$
 7 ▶ $x=50$ 8 ▶ $x=-25$
 9 ▶ $x=\frac{5}{3}$ 10 ▶ $x=\pm 3$
 11 ▶ $x=\frac{6}{7}$ 12 ▶ $x=\pm 5$

EXERCISE 4*

- 1 ▶ $x=4$ 2 ▶ $x=-8$
 3 ▶ $x=\frac{1}{6}$ 4 ▶ $x=-64$
 5 ▶ $x=4$ 6 ▶ $x=\pm 8$
 7 ▶ $x=\pm 2$ 8 ▶ $x=0.32$
 9 ▶ $x=\frac{5}{6}$ 10 ▶ $x=\frac{a+b}{ab}$
 11 ▶ $x=\frac{7}{12}$ 12 ▶ $x=\frac{b-a}{ab}$

EXERCISE 5

- 1 ▶ $x=3, y=1$ 2 ▶ $x=2, y=1$
 3 ▶ $x=1, y=4$ 4 ▶ $x=2, y=4$
 5 ▶ $x=1, y=6$ 6 ▶ $x=2, y=5$
 7 ▶ $x=-1, y=2$ 8 ▶ $x=-2, y=2$
 9 ▶ $x=3, y=-1$ 10 ▶ $x=2, y=-2$

EXERCISE 5*

- 1 ▶ $x=1, y=2$ 2 ▶ $x=1, y=2$
 3 ▶ $x=4, y=1$ 4 ▶ $x=3, y=1$
 5 ▶ $x=2, y=1$ 6 ▶ $x=5, y=3$
 7 ▶ $x=1, y=-2$ 8 ▶ $x=4, y=5$
 9 ▶ $x=-3, y=\frac{1}{2}$ 10 ▶ $x=-2, y=1$

EXERCISE 6

- 1** ▶ (5, 3) **2** ▶ (1, 1)
3 ▶ (3, 2) **4** ▶ (2, 1)
5 ▶ (1, 2) **6** ▶ (-1, 3)
7 ▶ (1, 1) **8** ▶ (-2, 1)
9 ▶ (1, -1) **10** ▶ (-1, 2)

EXERCISE 6*

- 1** ▶ (8, 3) **2** ▶ (2, -1) **3** ▶ (4, 5)
4 ▶ (3, $-\frac{1}{2}$) **5** ▶ (1, 5) **6** ▶ (8, 5)
7 ▶ (0, -2) **8** ▶ (-7, 0) **9** ▶ (-1, 5)
10 ▶ (1, 1)

EXERCISE 7

- 1** ▶ (2, 5) **2** ▶ (4, 1)
3 ▶ (5, 1) **4** ▶ (-2.75, -0.75)
5 ▶ (1, 3) **6** ▶ (-2, 1)
7 ▶ (5, -1) **8** ▶ (3, -2)
9 ▶ (2, 1) **10** ▶ (1, 2)

EXERCISE 7*

- 1** ▶ (3, -1) **2** ▶ (4, -2)
3 ▶ (1, 2) **4** ▶ (4, -3)
5 ▶ (-0.4, 2.6) **6** ▶ (1, 1)
7 ▶ (7, 3) **8** ▶ (4, -1)
9 ▶ (0.5, 0.75) **10** ▶ (0.2, -0.6)
11 ▶ (4, 6) **12** ▶ (-5, 4)
13 ▶ $a = -0.6, b = -0.8$ **14** ▶ $c = 0.6, d = -0.2$
15 ▶ (0.4, 0.5) **16** ▶ (4, -6)

EXERCISE 8

- 1** ▶ 29, 83
2 ▶ 12, 16
3 ▶ 9, 4
4 ▶ $x = 2, y = 3$, area = 180
5 ▶ Burger 99p, cola 49p
6 ▶ Rollercoaster £1.50, water slide 90p
7 ▶ 27 @ 20p, 12 @ 50p
8 ▶ 420
9 ▶ 11
10 ▶ 39

EXERCISE 8*

- 1** ▶ (2, 3) **2** ▶ $m = 2, c = -1$
3 ▶ $\frac{12}{17}$ **4** ▶ 1.5 m/s
5 ▶ 16 years **6** ▶ 7.5 km
7 ▶ 150 km **8** ▶ 37
9 ▶ 84 m
10 ▶ Urban 63 km, Motorway 105 km, total 168 km

EXERCISE 9

REVISION

- 1** ▶ $x(x - 8)$ **2** ▶ $3x(x + 4)$
3 ▶ $6xy(y - 5x)$ **4** ▶ $3x(4x^2 + 3x - 5)$
5 ▶ $x - 1$ **6** ▶ $\frac{x + y}{x - y}$
7 ▶ $x = 4$ **8** ▶ $x = 6$
9 ▶ $x = -4$ **10** ▶ $n = 2$
11 ▶ 24 **12** ▶ (-1, 3)
13 ▶ (0, 3) **14** ▶ (2, 2)
15 ▶ (1, 3)
16 ▶ CD £7.50, USB stick £3.50
17 ▶ 19 @ 10p, 11 @ 20p

EXERCISE 9*

REVISION

- 1** ▶ $3x^3(x - 4)$ **2** ▶ $\frac{2}{3}pr^2(2r + 1)$
3 ▶ $6x^2y(4xy - 3)$
4 ▶ $3a^2b^2c^2(5b - 3a + 7c)$
5 ▶ $\frac{x}{y}$ **6** ▶ x
7 ▶ $x = \frac{1}{3}$ **8** ▶ $x = -4$
9 ▶ $x = 6$ **10** ▶ $x = \frac{1}{2}$
11 ▶ 70 years **12** ▶ (2, 3)
13 ▶ (4, 1) **14** ▶ (4, 1.5)
15 ▶ $(3\frac{1}{3}, 2)$ **16** ▶ $a = \frac{3}{11}, b = \frac{2}{11}$
17 ▶ Abdul is 38, Pavel is 14

EXAM PRACTICE: ALGEBRA 3

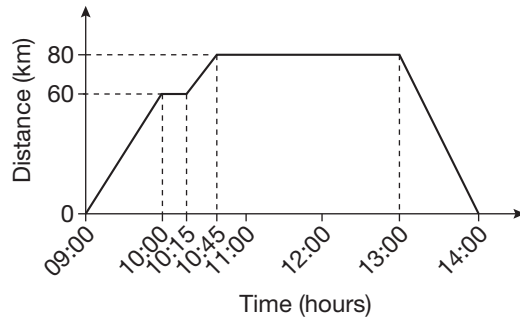
- 1** ▶ **a** $3x(x + 2)$ **b** $7ab(4b - 3a)$
2 ▶ **a** $\frac{x - 2}{2}$ **b** $\frac{x}{y}$
3 ▶ **a** $x = -5$ **b** $x = 7$
c $x = 15$ **d** $x = -15$
4 ▶ **a** $x = -1, y = 2$ **b** $x = 3, y = -2$
5 ▶ An orange costs 50 cents, a mango costs 70 cents.

UNIT 3: GRAPHS 3

EXERCISE 1

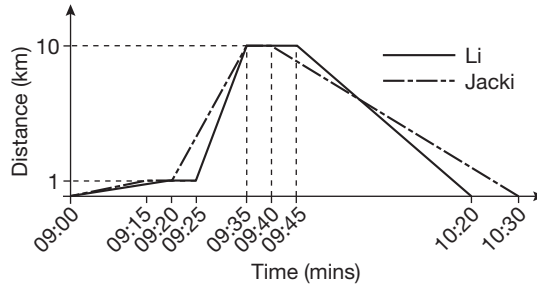
- 1** ▶ **a** 65 km/h **b** 50 km/h
c 12:00 **d** 72.5 km
e 11:08 approx
2 ▶ **a** 09:30 for half an hour
b 09:00 and 10:54
c 20 miles **d** 80 mph; yes!
e 53.3 mph **f** 53.3 mph

3 ► a



b 14:00

4 ► a



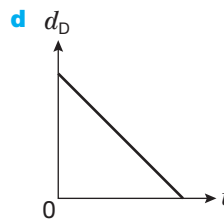
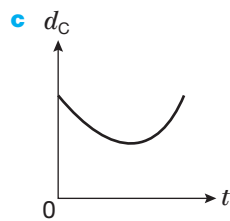
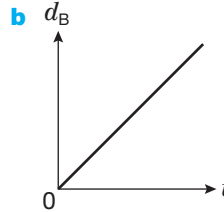
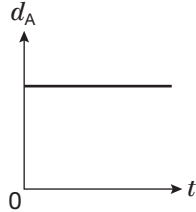
b Li at 10:20, Jacki at 10:30

c 09:20, 09:35–09:40, 09:57

d Li: 18.5 km/h, Jacki: 15 km/h

EXERCISE 1*

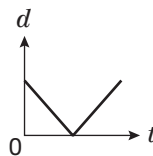
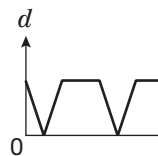
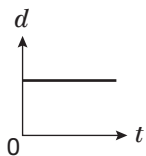
1 ► a



2 ►

Exercise 1

Exercise 2

Exercise 3
diagonal route:

3 ► a (i) B & C joint 1st, A 2nd

(ii) C 1st, B 2nd, A 3rd

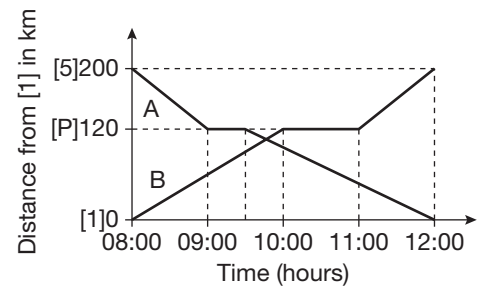
(iii) A 1st, B 2nd, C 3rd

b 28.5 s

c B

d (i) A (ii) C

4 ► a



b 09:47

c A: 48 km/h, B: 80 km/h

d A: 57 km/h, B: 67 km/h

EXERCISE 2

1 ► a

a 2 m/s²b 4 m/s²

c 150 m

d 10 m/s

2 ► a

a 3.5 km/h²b 7 km/h²

c 10.5 km

d 3.5 km/h

3 ► a

a 2 m/s²b 1 m/s²

c 8000 m

d 50 m/s

4 ► a

a 30 m/s

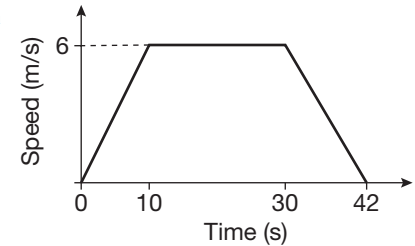
b 10 s

c 570 m approx

d 23 m/s approx

EXERCISE 2*

1 ► a

b 0.6 m/s²c -0.5 m/s²

d 4.43 m/s (3 s.f.)

2 ► a

a $S = 120$ m/s

b 9600 m

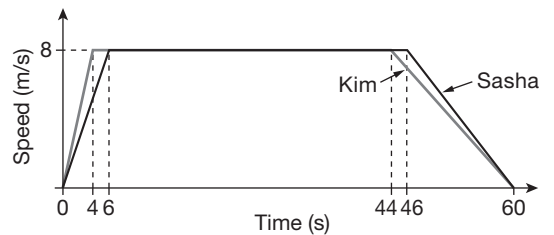
c 80 m/s

3 ► a

a $t = 10$ s, so distance = 1900 mb -3 m/s²

c 47.5 m/s

4 ► a



b Dead heat

c 6.67 m/s (to 3 s.f.) for both runners

d 400 m

- e (i) Sasha reaches 100 m after 15.5 s. Kim reaches 100 m after 14.5 s. Kim is in the lead at 100 m.

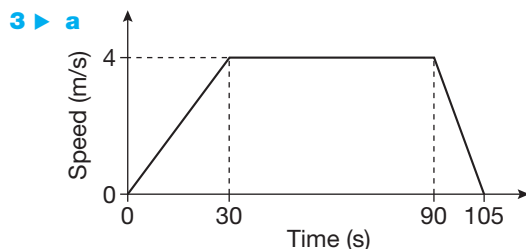
- (ii) Sasha reaches 300 m after 40.5 s. Kim reaches 300 m after 39.5 s. Kim is in the lead at 300 m.

- 5 ► Bee cannot have two speeds at any given time.

EXERCISE 3

REVISION

- 1 ► a 20 min b 10:00
c 10 km/h d $3\frac{1}{3}$ km
2 ► a 0.4 m/s b 10 min c 0.2 m/s



- b $\frac{2}{15}$ m/s² c 0 m/s²
d $\frac{4}{15}$ m/s² e $3\frac{1}{7}$ m/s
4 ► a 400 m b 1050 m
c 10.5 m/s d 0.33 m/s

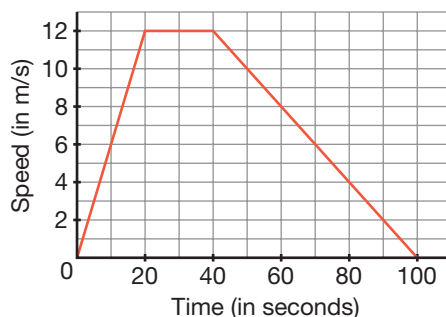
EXERCISE 3*

REVISION

- 1 ► b Daniela home at 12:00, Alberto home at 12:00
c Daniela 1.48 m/s, Alberto 2.22 m/s
2 ► a 50 m/s b 0.53 s approx at 30 m/s
3 ► a False; it is constant at $\frac{2}{3}$ m/s²
b True c True
d False; it is 72 km/h
4 ► a 32 m b $\frac{2}{3}$ m/s² c 3.2 m/s

EXAM PRACTICE: GRAPHS 3

- 1 ► a 1 km/min b 5 mins c 120 km/h
2 ► a



- b (i) 0.6 m/s² (ii) 0.2 m/s² (iii) 7.2 m/s

- 3 ► a 9.8 m/s b 35.4 km/h
c 11.2 m/s d 2.2 m/s²

UNIT 3: SHAPE AND SPACE 3

EXERCISE 1

- 1 ► x: hyp, y: opp, z: adj
2 ► x: hyp, y: adj, z: opp
3 ► x: opp, y: adj, z: hyp
4 ► $\frac{3}{4}$ 5 ► $\frac{4}{3}$
6 ► $\frac{5}{12}$ 7 ► 5.77
8 ► 74.6 9 ► 86.6
10 ► 16 11 ► 99.9
12 ► 99.9 13 ► 6.66 cm
14 ► 7.14 cm 15 ► 8.20 cm
16 ► 4.04 cm 17 ► 11.3 cm
18 ► 2.58 cm 19 ► 87.5 m
20 ► 86.6 m 21 ► 100 m²

EXERCISE 1*

- 1 ► 14.4 cm 2 ► 4.00 m
3 ► 200 cm 4 ► 173 cm
5 ► 8.45 m 6 ► 10.4 m
7 ► 100 m 8 ► 37.3 m
9 ► 22.4 m
10 ► BX = 2.66 m, BC = 4.00 m
11 ► x = 8.40 cm, y = 4.85 cm
12 ► x = 10.9 cm, y = 6.40 cm
13 ► x = 7.28 cm, y = 4.27 cm
14 ► x = 27.5 cm, y = 9.24 cm
15 ► a 25.4 m b 18.3 km/h
16 ► 6.88 cm

EXERCISE 2

- 1 ► 45° 2 ► 30°
3 ► 15° 4 ► 60.0°
5 ► 70.0° 6 ► 75.0°
7 ► 45.0° 8 ► 60.0°
9 ► 75.0° 10 ► 36.9°
11 ► 37.9° 12 ► 32.0°
13 ► 28.2° 14 ► 56.7°
15 ► 27.1°
16 ► a = 27.2°, b = 62.8°
17 ► 23.4°
18 ► 15°

EXERCISE 2*

1 ► $a = 69^\circ, b = 138^\circ$

2 ► 113°

3 ► 60°

4 ► 15°

5 ► 160°

6 ► a 125°

b 305°

7 ► a 080.5°

b 260.5°

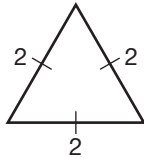
c 108.4°

d 236.3°

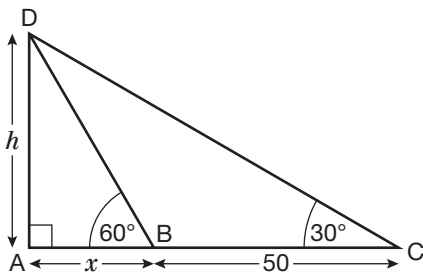
8 ► 13.9°

9 ► 101°

10 ►



11 ►



$$\text{From } \triangle ABC \quad x = \frac{h}{\tan 60^\circ} = \frac{h}{\sqrt{3}} = \frac{h\sqrt{3}}{3} \quad (1)$$

$$\text{From } \triangle ACD \quad 50 + x = \frac{h}{\tan 30^\circ} = h\sqrt{3} \quad (2)$$

$$\text{Sub (1) into (2) gives } 50 + \frac{h\sqrt{3}}{3} = h\sqrt{3}$$

$$50 = h\sqrt{3} - \frac{h\sqrt{3}}{3}$$

$$50 = \frac{2\sqrt{3}}{3}h$$

$$h = 25 \times \frac{3}{\sqrt{3}}$$

$$h = 25\sqrt{3}$$

EXERCISE 3

REVISION

1 ► 7.00

2 ► 6.71

3 ► 6.99

4 ► 11.0

5 ► 8.57

6 ► 6.93

7 ► 59.0°

8 ► 32.5°

9 ► 58.0°

10 ► 5.19 cm^2

11 ► 30°

EXERCISE 3*

REVISION

1 ► 549 m

2 ► a 063.4°

b 243°

3 ► a 1.01 m

b Undesirable to have too large a blind distance

4 ► Proof

5 ► $\tan 30^\circ = \frac{1}{\sqrt{3}}, \tan 45^\circ = 1$

$$x = \left(\frac{25 \div 1}{\sqrt{3}} \right) - (25 \div 1) = 25\sqrt{3} - 25 = 25(\sqrt{3} - 1)$$

EXAM PRACTICE: SHAPE AND SPACE 3

1 ► 10.3

2 ► 36.9°

3 ► 11.7 m

4 ► a $h_1 = 140 \text{ m}, h_2 = 380 \text{ m}$

b 1.44 m/s

5 ► a 237°

b Arrives at 5:14:10 approx so arrives safely!

UNIT 3: HANDLING DATA 2

EXERCISE 1

1 ► a

Score x	Tally	Frequency f	$f \times x$
1		3	$3 \times 1 = 3$
2		3	$3 \times 2 = 6$
3		3	$3 \times 3 = 9$
4		4	$4 \times 4 = 16$
5		3	$3 \times 5 = 15$
6		3	$3 \times 6 = 18$
7		2	$2 \times 7 = 14$
8		3	$3 \times 8 = 24$
9		3	$3 \times 9 = 27$
10		3	$3 \times 10 = 30$

$\sum f = 30$

$\sum fx = 162$

b Mean = $\frac{162}{30} = 5.4$

c Modal score = 4, median = 5

2 ► a

Number x	Tally	Frequency f	$f \times x$
4		2	$2 \times 4 = 8$
5		2	$2 \times 5 = 10$
6		1	$1 \times 6 = 6$
7		4	$4 \times 7 = 28$
8		3	$3 \times 8 = 24$
9		3	$3 \times 9 = 27$
10		1	$1 \times 10 = 10$
11		1	$1 \times 11 = 11$
12		3	$3 \times 12 = 36$

$\sum f = 20$

$\sum fx = 160$

b Mean = $\frac{160}{20} = 8$

c Modal number = 7, median = 8

3 ► a Mean = 2.52 b Mode = 3, median = 2

4 ► a Mean = 7.3 b Mode = 8, median = 8

EXERCISE 1*

1 ► a

Time t (secs)	Tally	Frequency f
$30 \leq t < 35$		3
$35 \leq t < 40$		4
$40 \leq t < 45$		4
$45 \leq t < 50$		5
$50 \leq t < 55$		0
$55 \leq t < 60$		4

b Mean = $\frac{885}{20} = 44.25$ s

c Median: $40 \leq t < 45$,
modal class: $45 \leq t < 50$

2 ► a Mean = $\frac{4775}{25} = 191$ kg

b Median: $150 \leq w < 200$,
mode: $150 \leq w < 200$

3 ► a Mean = $\frac{496}{100} = 4.96$

b Median: $4 \leq t < 6$, mode: $4 \leq t < 6$

4 ► a $t = 2$ b Mean = $\frac{44.3}{30} = 1.48$

c Median: $1.4 \leq h < 1.6$,
mode: $1.4 \leq h < 1.6$

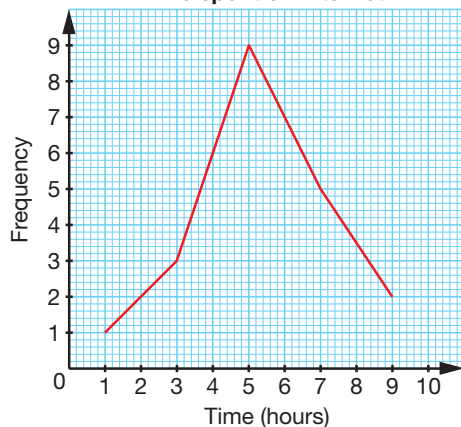
EXERCISE 2

REVISION

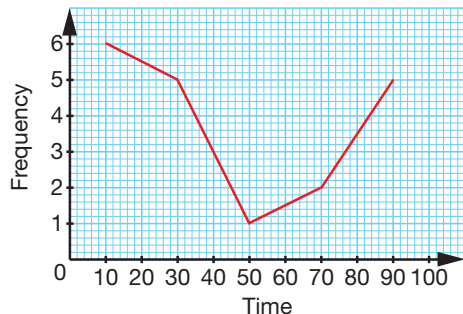
1 ► a

Time	$0 \leq t < 2$	$2 \leq t < 4$	$4 \leq t < 6$	$6 \leq t < 8$	$8 \leq t < 10$
Frequency	1	3	9	5	2
Mid-points	1	3	5	7	9

b Time spent on internet



2 ►



3 ► a 9.265

b $5 \leq x < 110$

c 25

d $5 \leq x < 10$

4 ► a 5

b 35

c 2.1

d On average families in rural communities have 1 child more than those living in the city.

EXERCISE 2*

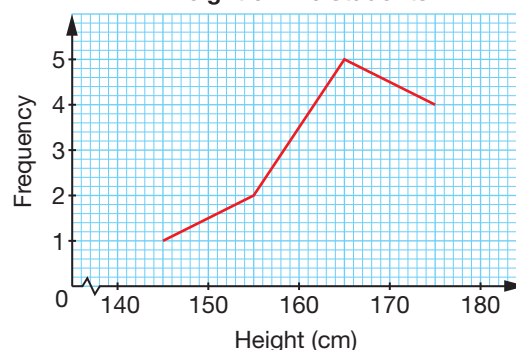
REVISION

1 ► a Continuous

b $x = 5$, $y = 4$

c

Height of Y10 students



2 ► a 36

b The total number of items is 36, so the median is at item $\frac{36+1}{2} = 18.5$

c $7.5 \leq d < 8.0$ d $7.0 \leq d < 7.5$

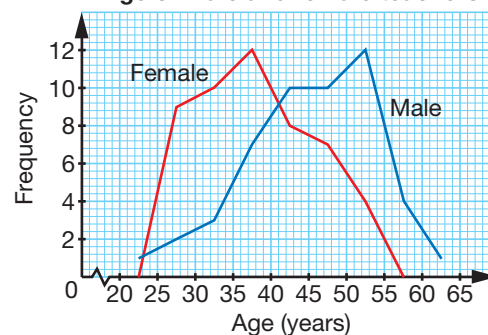
e Ben

f $7.5 \leq d < 8.0$

g Jamie; he has jumped over 8.0 m more times in training than Ben has.

3 ► a

Age of male and female teachers



b The mean age of male teachers is 45.2 and the mean age of female teachers is 38.1, showing that the male teachers are, on average, 7 years older than the female teachers.

c The male frequency polygon is to the right of the female frequency polygon.

4 ► $x = 15$

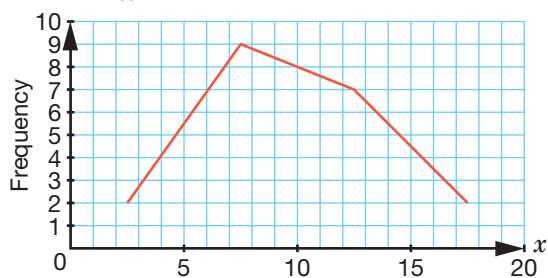
EXAM PRACTICE: HANDLING DATA 2

- 1 ▶ Previous mean = 2 baskets/game,
current mean = 2.7 baskets/game

2 ▶ a

t mins	Tally	Frequency f
$0 \leq t < 5$		2
$5 \leq t < 10$	 	9
$10 \leq t < 15$	 	7
$15 \leq t \leq 20$		2

(i)



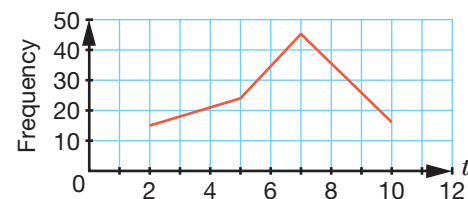
- (ii) Estimated mean = 9.75 mins,
modal class is $5 \leq t < 10$

- b Exact mean = 9.9 mins
c Difference as grouped data uses mid-points as a best estimate of each value.

3 ▶ a $p = 15$

Time t hrs	$0 \leq t < 4$	$4 \leq t < 6$	$6 \leq t < 8$	$8 \leq t < 12$
Frequency f	15	24	45	16

b (i)



- (ii) Estimated mean = 6.25 hrs,
modal class = $6 \leq t < 8$

- (iii) 38.5%