



All sample answers to the Cambridge Secondary 1 Checkpoint-style questions have been written by the authors of this work

1 Integers, powers and roots

1.1 Square roots and cube roots

- The answers in this question may be slightly different with different calculators
 - calculator answer is 2.25
 - 2.236111111
 - 2.236067978
 - $\sqrt{5}$ on this calculator is 2.236067977 which only differs in the final (9th) decimal place by 1.
- If the first estimate is 5 you will get these answers, with possible small differences
Second = 5.3; third = 5.291509434 ; fourth = 5.291502622
 - $\sqrt{28}$ on this calculator is exactly the same as the fourth estimate.
 - The calculator only gives a particular number of decimal places.
- 80
 - 300
 - 900
 - 70
 - 200
 - 700
- Divide the digits into 3 from the right 7 | 654 | 321 ; $\sqrt[3]{7} \approx 2$; the cube root is approximately 200

1.2 Working with indices

- 9
 - 7
 - 21
 - 15
 - 36
 - 42
 - 56
 - 99
- 10110
 - 110101
 - 1010011
 - 1100100
- $\frac{3}{4}$
 - $\frac{5}{8}$
 - $\frac{1}{16}$
 - $\frac{15}{16}$

Mixed questions

- 7
 - 20
 - 70
 - 200
- both are $\frac{1}{16}$
 - $5^{-3} = \frac{1}{125}$ and $3^{-5} = \frac{1}{243}$
- 0.125
 - 0.04
 - 0.05
- 2^6
 - 2^9
 - 2^{-6}
- 10.5°C and - 9.5°C
- impossible
 - 3
- $9\frac{1}{9}$
 - 1
- 0.001
 - 1 000 000

3 Place value, ordering and rounding

3.1 Multiplying and dividing decimals mentally

- 1 a 5.4 m^2 b 7.2 m^2 c 0.48 m^2 d 0.124 m^2
 2 4 m
 3 0.35 m
 4 a T b T c F, 0.0025 d F, 0.3 e T f T

3.2 Multiplying and dividing by powers of 10

- 1 a 45: A, D, H 4.5: B, E, J 0.45: C, G, I 0.045: F
 b Student's answers, e.g. 45×10^{-3}

3.3 Rounding

- 1 a i 1.95 ii 1.95
 b i 9.9 ii 10
 c i 1.4 ii 1.4142
 2 51000
 3 2.40
 4 a 420 cm^2 b 415.44 cm^2

3.4 Order of operations

1

1. 6	1	2. 5		3. 3			4. 1
9		5. 7	9	9	2	3	6
	6. 6	6		6			2
	7			7. 9	8. 2	5	0
9. 1	5	9	10. 5		0		
	0		0		11. 5	12. 2	5
13. 1		14. 1	4	4		0	
0			1		15. 1	2	6
16. 9	0	0	0	0		5	

Mixed questions

1 Fill in the missing powers in each of these

$$\begin{aligned} \text{a } 150,000 &= 150 \times 10^3 \\ &= 15 \times 10^4 \\ &= 1.5 \times 10^5 \end{aligned}$$

$$\begin{aligned} \text{b } 82,000 &= 820 \times 10^2 \\ &= 82 \times 10^3 \\ &= 8.2 \times 10^4 \end{aligned}$$

2 a ✓ b ✓ c ✗ d ✗ e ✓ f ✗

3 a $2.7 \times 100 = 2,700$ b $4.8 \times 10,000 = 48,000$ c $1.25 \times 100,000 = 125,000$

4 a B b A c C

4 Length, mass, capacity and time**4.1 Solving problems involving measurements**

1

Horse	Height in cm	Horse	Height in cm
Eagle	155	Jake	147.5
Summer	160	Amazon	172.5

2

Horse	Total amount of food (kg)	Amount of hay (kg)	Amount of hard feed (kg)
Eagle	10	6	4
Summer	12	9	3
Jake	9	5.4	3.6
Amazon	14.4	5.76	8.64

4.2 Solving problems involving average speed

1 a 50 mph b 80 kmph

4.3 Using compound measures

1 a 3 g

b 7.5 g

2 a Gold

b Wood (cedar)

c 520 g

d 3.6 g

e 17.6 g

f i 21600 cm³

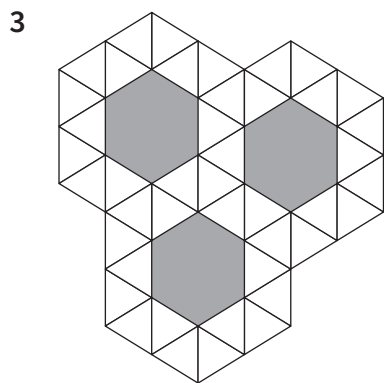
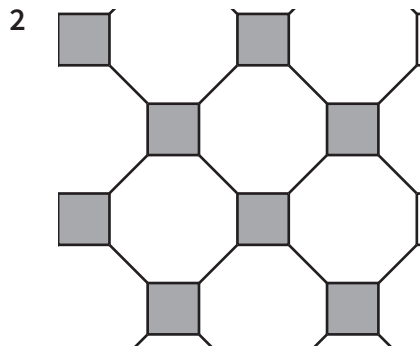
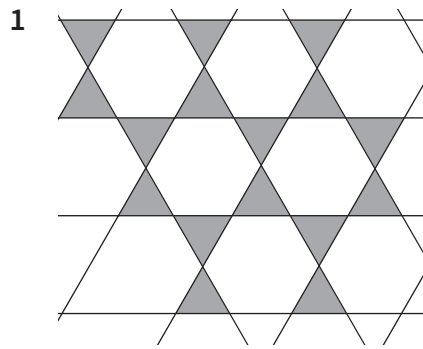
ii 15.12 kg

Mixed questions

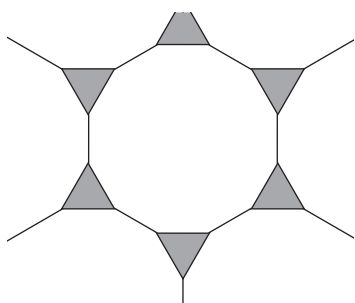
1 SERENA WILLIAMS

5 Shapes

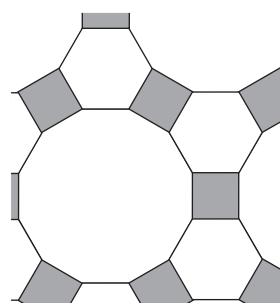
5.1 Regular polygons



4 There are two possible answers



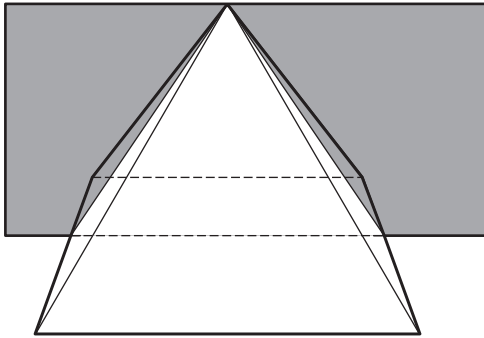
3.12.12 or



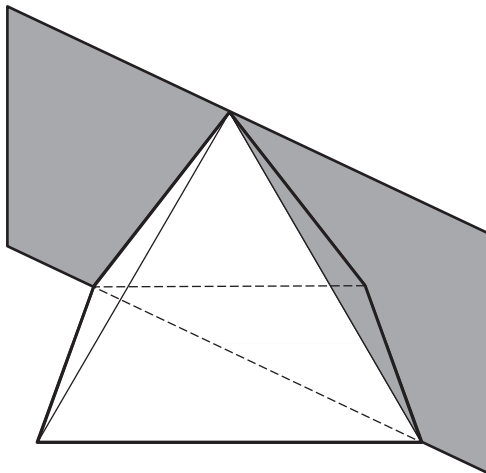
4.6.12

5.2 Symmetry of three-dimensional shapes

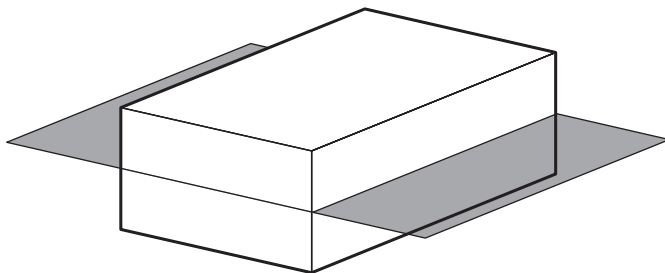
- 1 Two go through the midpoints of opposite edges of the base like this.



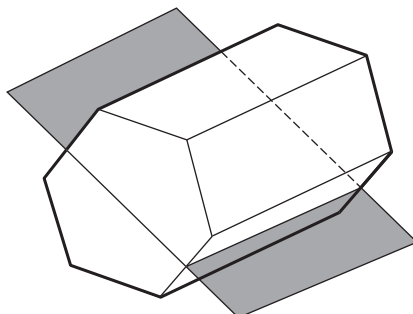
Two go through opposite corners of the base like this.



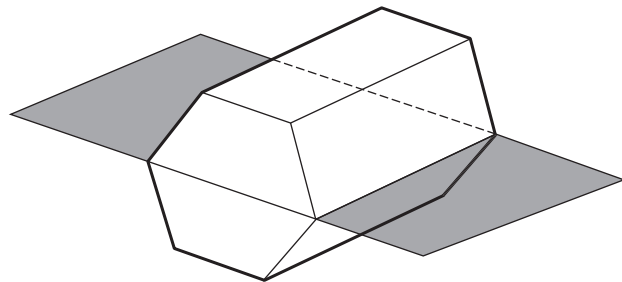
- 2 It has 3 planes of symmetry.
Each goes through the mid-point of four edges like this.



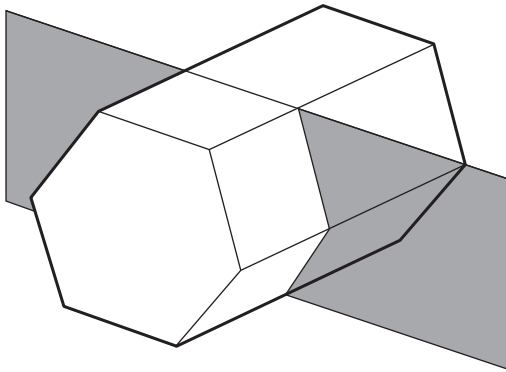
- 3 It has 7 planes of symmetry.
3 like this.



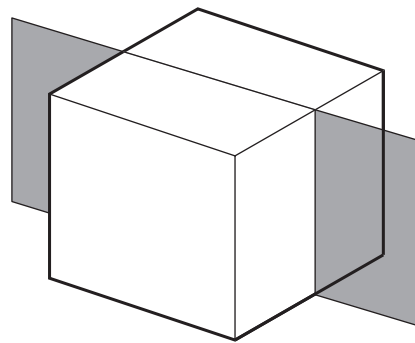
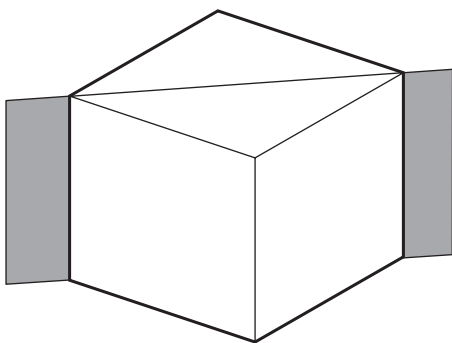
3 like this.



and this one

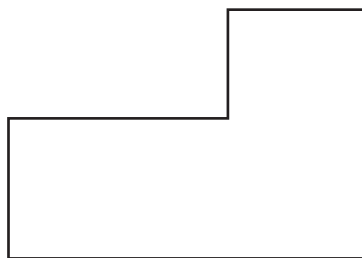


- 4 It has 9 planes of symmetry.
6 like this, through opposite edges and 3 like this

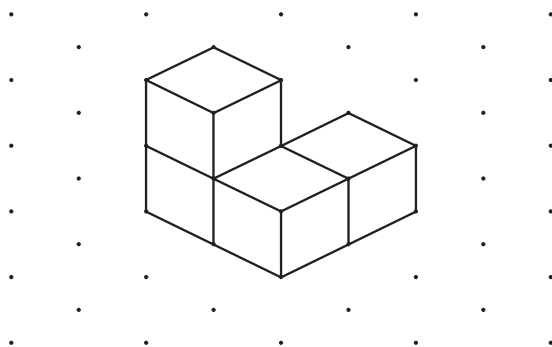


Mixed questions

- 1 a 20°
 b $5 \times 145^\circ = 725^\circ$ which is bigger than the angle sum of 720°
 c $5 \times 108 = 540$ so the sixth angle would need to be $720 - 540 = 180^\circ$ but that is a straight line
 d It is any L shape like this

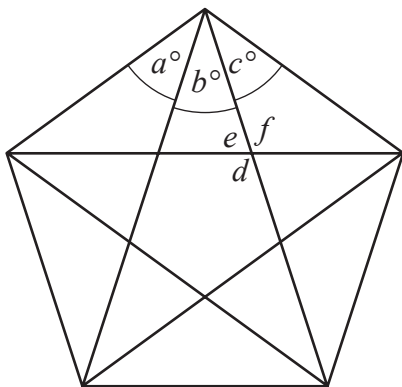


- 2 This is one possible drawing



- 3 The angle remaining is $360 - (60 + 90 + 108) = 102^\circ$. It is big enough for a triangle (60°) or a square (90°) but not for a pentagon (108°) or any other regular polygon.

4



The inner pentagon must also be regular. Angle $d = 108^\circ$, the angle of a regular pentagon. Angle $e = 180 - 108 = 72^\circ$. The shape is symmetrical so the triangle that includes b and e is isosceles. Angle $b = 180 - 2 \times 72 = 36^\circ$.

Symmetry means that a and c are equal. $a + b + c = 180$ so $a = c = (180 - 36) \div 2 = 36^\circ$. This shows that a , b and c are all the same.

6 Planning and collecting data

6.1 Identifying data

Investigation (1)

1 to 8 Students answers

6.2 Types of data

Investigation (2)

1 to 3 Students answers

6.3 Designing data collection sheets

Investigation (3)

- 1 Students data collection sheet

6.3 Collecting data

Investigation (4)

- 1 Students completed data collection sheet
- 2 Students conclusion
- 3 Students answer

Mixed questions

Investigation (5)

- 1 Students drawing of at least two charts or graphs representing their data

7 Fractions

7.1 Writing a fraction in its simplest form

- 1 a $\frac{3}{4}$ b $\frac{1}{5}$ c $\frac{1}{20}$
 2 a $\frac{8}{25}$ b $\frac{1}{3}$ c $\frac{3}{10}$ d $\frac{7}{150}$
 3 $\frac{8}{15}$

7.2 Adding and subtracting fractions

- 1 a $\frac{19}{40}$ b $\frac{37}{90}$
 c $\frac{41}{360}$
 2 a Any one of $1\frac{1}{36}$, $\frac{67}{72}$, $1\frac{7}{36}$, $1\frac{1}{72}$, $1\frac{5}{18}$, $1\frac{13}{72}$
 b $\frac{5}{9} + \frac{13}{18} = 1\frac{5}{18}$
 c Any one of $\frac{1}{12}$, $\frac{1}{72}$, $\frac{1}{4}$, $\frac{7}{72}$, $\frac{1}{6}$, $\frac{19}{72}$
 d $\frac{17}{36} - \frac{11}{24} = \frac{1}{72}$

7.3 Multiplying fractions

- 1 a $1\frac{11}{25}$ b $4\frac{1}{6}$ c $5\frac{1}{5}$ d $1\frac{43}{56}$
 2 24 m^3

7.4 Dividing fractions

- 1 $2\frac{3}{4} \text{ m}$
 2 a $1 : \frac{2}{3}$ b $1\frac{3}{4} : 1$
 3 50 kg

7.5 Working with fractions mentally

- 1 $\frac{5}{6}, \frac{2}{3}, 6, 5, \frac{2}{5}, \times, +, 1\frac{1}{9}$

Mixed questions

- 1 $\frac{4}{7} \div \frac{3}{14} = 2\frac{2}{3}$, $1\frac{1}{2} + 3\frac{2}{3} = 5\frac{1}{6}$, $2\frac{2}{5} \times 1\frac{1}{2} = 3\frac{3}{5}$, $8\frac{3}{4} - 2\frac{5}{6} = 5\frac{11}{12}$

8 Constructions and Pythagoras' theorem

8.1 Constructing perpendicular lines

- a, b, c Student's constructions
 - Angle HDI = accurate answer is 26.5° , allow 24° to 29°
Angle CGF = accurate answer is 63.5° , allow 61° to 66°
 - They are similar triangles

8.2 Inscribing shapes in circles

- a Student's construction, 8.5 cm, allow 8.4 cm to 8.6 cm
 - 113 cm² ii 72 cm², allow 70.5 cm² to 74 cm²
- a Student's construction, 4.2 cm, allow 4.1 cm to 4.3 cm
 - Base length = 7.3 cm, allow 7.1 cm to 7.5 cm. Height = 6.4 cm, allow 6.2 cm to 6.6 cm
 - i 55.4 cm², allow 52 cm² to 58 cm² ii 23 cm², allow 22 cm² to 25 cm²
- 20.35%, allow 19.4% to 22.2%

8.3 Using Pythagoras' theorem

- 4.66 m
- 5 cm
- a 8.49 cm b 212.1 cm² or 212.3 cm²

Mixed questions

- 4.52 m
- a 188 cm b 2 c 16 cm
- 7.91 m²

9 Expressions and formulae

9.1 Simplifying algebraic expressions

- a $\frac{1}{2^2}$, so $\frac{1}{2^2} = 2^{-2}$
 - $\frac{1}{3^4}$ and 3^{-4} , so $\frac{1}{3^4} = 3^{-4}$
 - $\frac{1}{x^1}$ and x^{-1} , so $\frac{1}{x^1}$ and x^{-1}
- b $\frac{1}{5^3}$ c $\frac{1}{8^5}$ d $\frac{1}{x^4}$ e $\frac{1}{y^7}$ f $\frac{1}{z^1}$
- a $x^{-3} = \frac{1}{x^3}$ b $y^{-4} = \frac{1}{y^4}$ c $m^{-8} = \frac{1}{m^8}$ d $n^{-5} = \frac{1}{n^5}$

9.2 Constructing algebraic expressions

- 1 a i \$26 ii \$46 b \$10 c \$16 d
- $16 + 10d$

9.3 Substituting into expressions

- 1 a 18 kg b 14 kg

c

Age (A years)	1	2	3	4	5
Mass using expression ①	10.5	13	15.5	18	20.5
Mass using expression ②	10	12	14	16	18

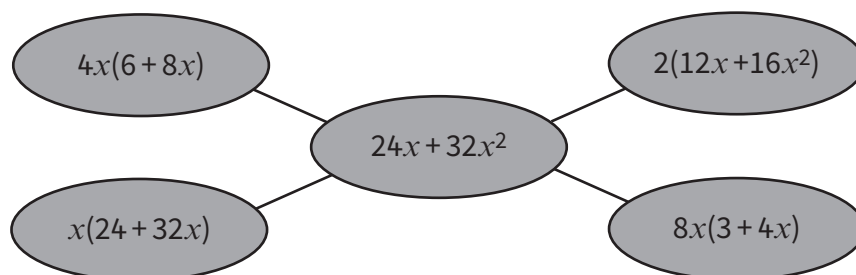
- d Expression ②, 13.5 kg is closer to 14 kg [②] than 15.5 kg [①]

9.4 Deriving and using formulae

- 1 a 2 b 42 c 120

9.5 Factorising

- 1 a



b $8x(3 + 4x)$

- 2 a
- $7x + 7$

b $7(x + 1)$

9.6 Adding and subtracting algebraic fractions

- 1 a
- $\frac{y+x}{xy}$
- b
- $\frac{d+c}{cd}$
- c
- $\frac{y-x}{xy}$
- d
- $\frac{2b+a}{ab}$
- e
- $\frac{5n-2m}{mn}$

9.7 Expanding the product of two linear expressions

1 $x^2 - 3x + 4x - 12 + 5x - x^2 = 6x - 12$

$$6x - 12 = 6x - 12$$

2 a $6x^2 + 4x + 3x + 2 = 6x^2 + 7x + 2$

b i $12x^2 + 19x + 5$

ii $8y^2 - 14y - 15$

Mixed questions

- 1 a i $x^2 + 12x + 36$
 ii $x^2 + 12x + 35$, student's answer e.g. there is a difference of 1
- 2 a i $x^2 + 14x + 49$
 ii $x^2 + 14x + 48$, student's answer e.g. there is a difference of 1
- 3 Student's answers e.g. $(x+5)^2$ and $(x+4)(x+6)$ giving $x^2 + 10x + 25$ and $x^2 + 10x + 24$ or $(x+8)^2$ and $(x+7)(x+9)$ giving $x^2 + 16x + 64$ and $x^2 + 16x + 63$. There is still a difference of 1

10 Processing and presenting data**10.1 Calculating statistics**

- 1 $138 - \frac{57}{100} = 137.43$ g
- 2 80.32 matches
- 3 63.375 years
- 4 26.54 to 2 d.p.
- 5 64 minutes

10.2 Using statistics

- 1 a 22 b 21.74 c less
- 2 a 42 b 42.125 c more
- 3 a more; more; more; less
 b median of the girls = 18; median of the boys = 16; mean of the girls = 17.775; mean of the boys = 16.7

Mixed questions

- 1 a 16 b 15 c 16.4 d 6 e i 14 ii 13 iii 14.4 iv 6
- 2 a 12 b 11 c 11.87 to 2 d.p. d 7
- e the mean or the median
- f The mean is 15.87 and has increased by 4 cm or the median is 15 cm and has increased by 3 cm.
- 3 Here are some possible answers

	Team A	Team B	
Range	19 years	7 years	The range for team A is more than double the range for team B
Median	23 years	26 years	On average team A are younger by 3 years
Mean	26.4 years	26.6 years	The average ages are similar

It is not useful to find the modes.

11 Percentages

11.1 Using mental methods

- 1 a \$6.42 b \$5.35 c \$9.63 d \$3.21 e \$22.47 f \$0.54
 2 a \$13.20 b \$2.64 c \$1.32 d \$0.66 e \$3.30 f \$4.62 g \$1.98
 h \$15.18

3

\$88	\$450	\$2.80	\$7200
\$13.20	\$67.50	\$0.42	\$1080

- 4 a \$14.85 b \$6.10 c \$6.60 d \$570
 5 a \$10.65 b \$9.39 c \$22.10 d \$4.14
 6 a \$3.10 b \$8.28 c \$51.15 d \$13.40

11.2 Percentage changes

- 1 All answers are rounded to 1 d.p.
 a 3.6% b 16.7% c 12.5% d 10.5% e 70.3% f 123.6%
 2 All answers are rounded to 1 d.p.
 a 3.4% b 27.9% c 44.5% d 12.8% e 16.6% f 56.5%
 3 a 20.7% increase b 39.9% decrease c 76.0% decrease
 d 24.9% increase

4

2018	2019	2020
3.5 m	4.0 m	4.5 m
16.7%	14.3%	12.5%

Mixed questions

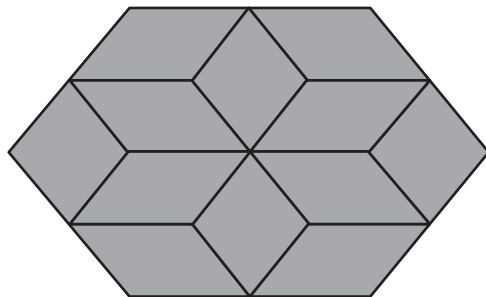
- 1 a \$53.50 b \$112.70 c \$20.40 d \$4.84
 2 174
 3 a 44% b 259
 4 a She must divide by the total pay, not by the money received.
 b 23%
 c Razi pays 21% tax which is a smaller percentage than Maha.
 5 a He must find 25% of the cost before the tax is added.
 b If the tax is \$0.96, then the price before the tax is added is $\$4.80 - \$0.96 = \$3.84$
 Then 25% of $\$3.84 = \0.96 which is correct.

12 Tessellations, transformations and loci

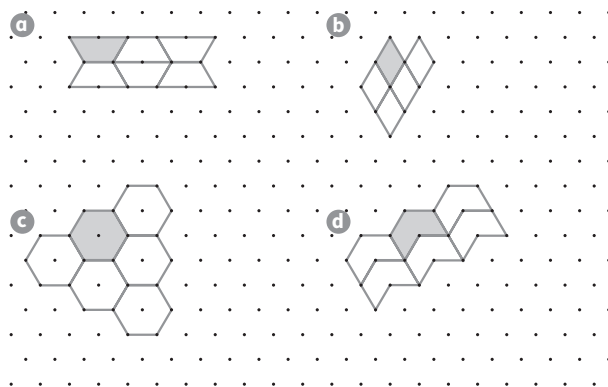
12.1 Tessellating shapes

1 a $a = 65^\circ, b = 115^\circ, c = 65^\circ, d = 130^\circ, e = 130^\circ, f = 50^\circ$

b example

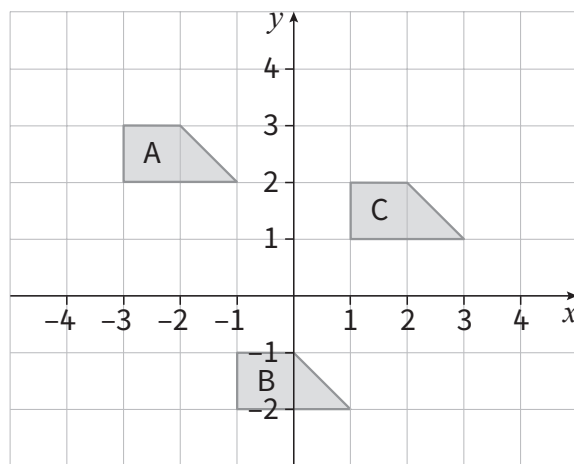


2 examples



12.2 Solving transformation problems

1 a, b



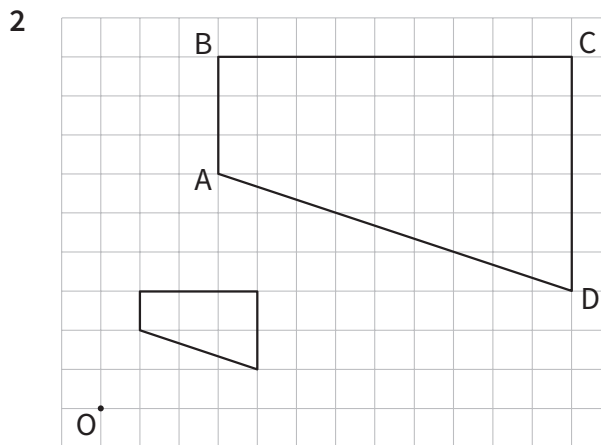
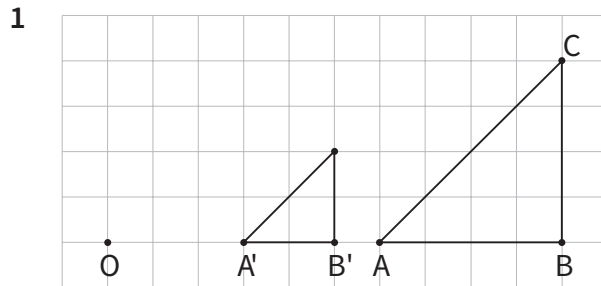
c $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$ Add them together and you get the answer $\begin{pmatrix} 2 \\ -4 \end{pmatrix} + \begin{pmatrix} 2 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$

d i $\begin{pmatrix} 6 \\ 5 \end{pmatrix}$ ii $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$

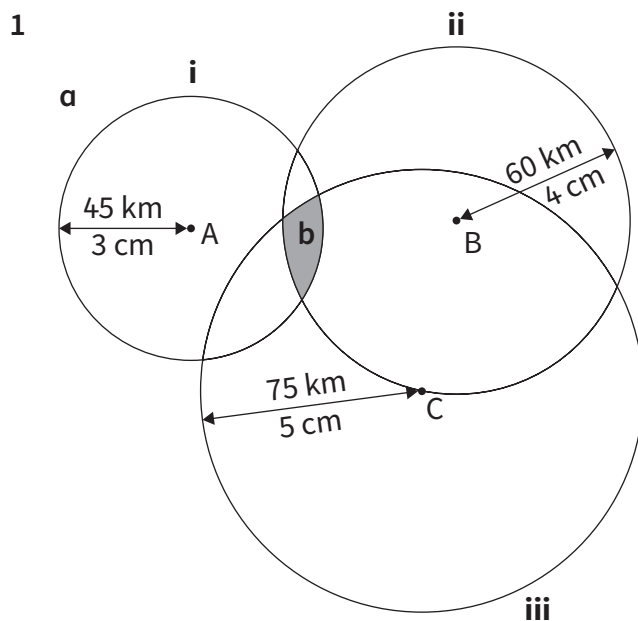
12.3 Transforming shapes

- 1 Students answer, e.g. reflection in y-axis followed by a translation using the vector $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$
- 2 Students answer, e.g. reflection in y-axis followed by a rotation of 90° , clockwise about $(1, -1)$

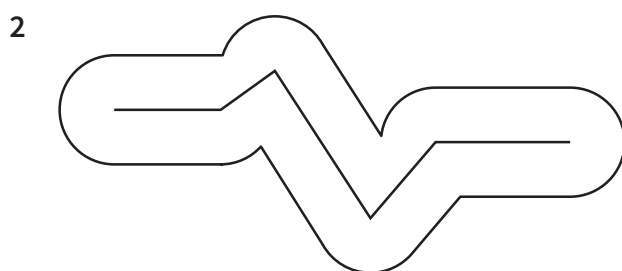
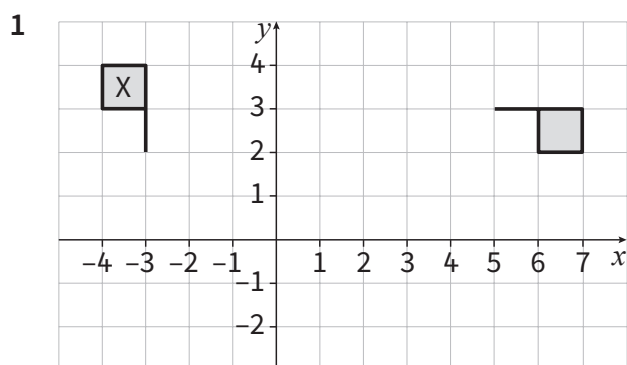
12.4 Enlarging shapes



12.5 Drawing a locus



Mixed questions


13 Equations and inequalities
13.1 Solving linear equations

- 1 a 36 b 40 c 15 d 12 e 20 f 9
 2 a 12 b 6 c 12 d 24 e 8 f 24
 3 a 23 b 11.5 c 8 d 33

13.2 Trial and improvement

1 a

x	$x^3 + x$
2	10
2.1	11.361
2.2	12.848
2.14	11.940344
2.15	12.088375

- b between 2.14 and 2.15
- 2 Calculator answers may vary in the final digits
 a $x_2 = 2.15443469$ b $x_3 = 2.143286454$
 c $x_4 = 2.144095104$ d $x_5 = 2.144036468$
 e Answers $\rightarrow 2.144$ f 2.144 (3 d.p.)
- 3 a $3^3 + 3 = 30$ which is less than 40 b $x^3 = 40 - x$ and take cube root.
 c $x_2 = 3.332221852$; $x_3 = 3.322218546$; $x_4 = 3.322520629$; $x_5 = 3.322511508$
 d 3.3225
- 4 If $x_1 = 5$ then $x_2 = 5.253587872$, $x_3 = 5.25052345$, $x_4 = 5.250560503$, $x_5 = 5.250560055$,
 $x = 5.25056$ to 5 d.p.

Mixed questions

- 1 13.5
 2 $13\frac{1}{3}$
 3 50
 4 a $N + 1, N + 2, N + 3$ b $N + N + 1 + N + 2 + N + 3 = 654$ or $4N + 6 = 654$
 c 162
 5 \$23.49 and \$14.25
 6 a The line $y = 3$ crosses the graph at two points b $x = 2.6$
 c Here are some possible values, rounded to 4 d.p.

x	$x + \frac{1}{x}$
2.6	2.9846
2.7	3.0704
2.65	3.0274
2.63	3.0102
2.62	3.0017
2.61	2.9931

$$x = 2.62$$

14 Ratio and proportion
14.1 Comparing and using ratios

- 1 a 1 : 1.33 b 1 : 1.78 c 1 : 2.4 d 1 : 2.33
 e Calculator screen, it has the highest aspect ratio. The screen's width is 2.4 times its height, higher than the others.

2 a

Car	Power : weight (unit ratio)
Ford model T (1908)	28 : 1
Mini 1275GT (1969)	83 : 1
Ferrari Testarossa (1984)	193 : 1
Land Rover Defender (1990)	49 : 1
Ariel Atom 3S (2014)	426 : 1
Koenigsegg One (2015)	763 : 1

- b Koenigsegg One, more power per tonne than any of the others
 3 9, 10

14.2 Solving problems

- \$187
- Joe = 180 cm, Ismail = 184 cm, Hassan = 187 cm, Carlos = 190 cm

Mixed questions

- 7 walking, 8 trotting, 9 cantering
 - 1 walking group with all 7 riders and 3 staff. 2 trotting groups with 4 riders per group and 2 staff per group. 2 cantering groups with 4 riders in one group and 5 in the other and 1 staff per group. They need 9 staff.

15 Area, Perimeter and Volume**15.1 Converting units of area and volume**

- 2 000 000 mm² b 54 000 mm² c 78 m² d 0.35 m²
- 40 cm (or 400 mm)
- 26 hours, 52 minutes and 48 seconds

15.2 Using hectares

1 a

Island	kilometres ²	Hectares	miles ²	acres
Kyushu	37 437	3 743 700	14 454.4	9 250 841.7
Sardinia	23 949	2 394 900	9 246.7	5 917 899.6
Spitsbergen	38 982.1	3 898 209	15 051	9 632 640
Timor	28 417.5	2 841 748	10 972	7022080

- b Spitsbergen, Kyushu, Timor, Sardinia

15.3 Solving circle problems

- 698.94 cm²
- 400 m
 - 46.56 m
 - 461.33 m

15.4 Calculating with prisms and cylinders

- 729 cm³
 - 13 851 g
 - \$96 957
- The smallest [233 cm³/\$ compared to the medium, 200 cm³/\$ and the large, 224 cm³/\$]

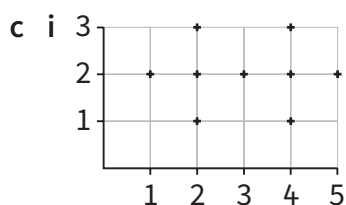
Mixed questions

- $h = 12.22$ cm, $x = 6$ cm, $y = 14$ cm

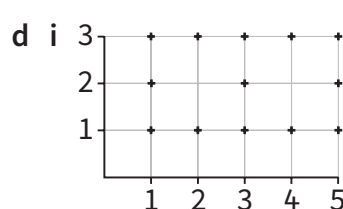
16 Probability

16.1 Sample space diagrams

1 a $\frac{2}{15}$ b $\frac{6}{15} = \frac{2}{5}$



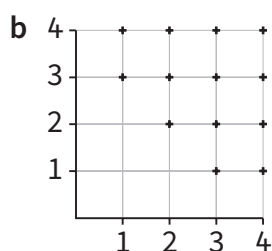
ii $\frac{2}{9}$



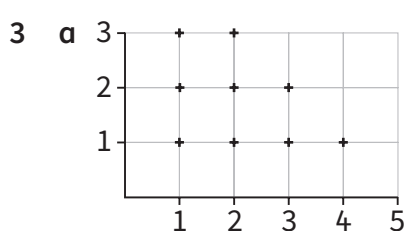
ii $\frac{6}{13}$

2 a i $\frac{3}{16}$

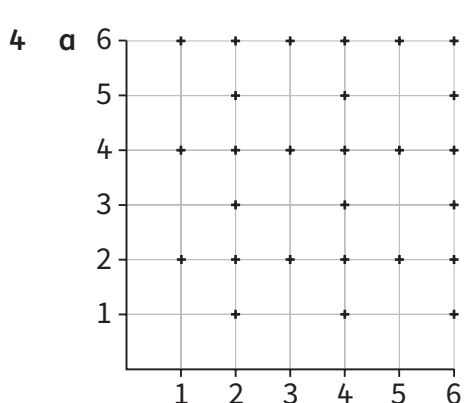
ii $\frac{6}{16} = \frac{3}{8}$



c i $\frac{3}{13}$ ii $\frac{6}{13}$



b i $\frac{3}{9} = \frac{1}{3}$ ii $\frac{3}{9} = \frac{1}{3}$



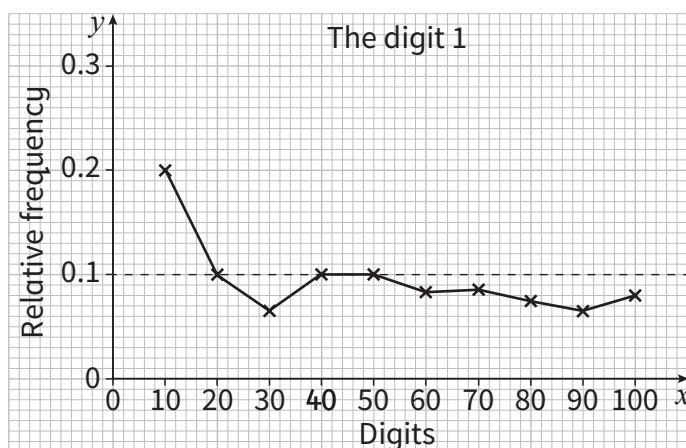
b i $\frac{9}{27} = \frac{1}{3}$ ii 0 iii $\frac{12}{27} = \frac{4}{9}$ iv $\frac{3}{27} = \frac{1}{9}$

16.2 Using relative frequency

1 a

Number of digits	10	20	30	40	50	60	70	80	90	100
Relative frequency	0.2	0.1	0.067	0.1	0.1	0.083	0.086	0.075	0.067	0.08

b and d



c 0.1 e, f, g, student's own choice

h You will usually find the relative frequency is close to 0.1 after more than 50 digits. Here are the relative frequencies after 100 digits.

Digit	0	1	2	3	4	5	6	7	8	9
Relative frequency	0.08	0.08	0.12	0.12	0.1	0.08	0.09	0.08	0.12	0.13

i The relative frequencies overall are closer to 0.1

Mixed questions

1 $\frac{4}{7}$

2 a $\frac{4}{36} = \frac{1}{9}$ b $\frac{13}{36}$

3 a 0.15 b 0.375

4 Only e is true

5 Answers are rounded to 2 d.p. a 0.62 b 0.07 c 0.77 d 0.26

17 Bearings and scale drawings

17.1 Using bearings

1 a 050° b 230° c 110° d 290°

2 a 090°

b i 150° ii 210° iii 270° iv 330° v 030°

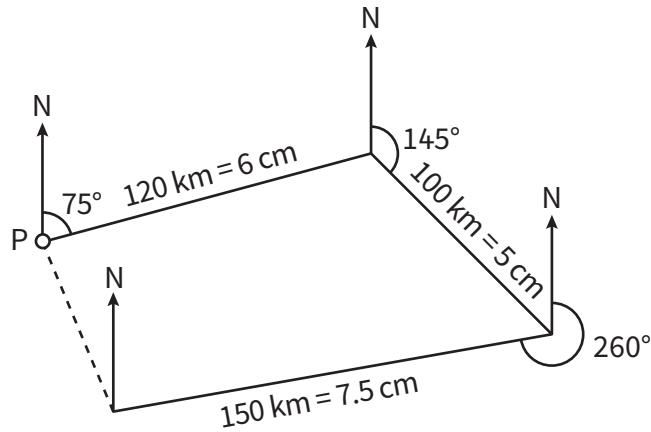
17.2 Making scale drawings

1 a 160°

b 280°

c Student's accurate copy of sketch.

- 2 a Student's accurate copy of this drawing



- b answers in ranges 72 – 78 km and 338 – 342°

Mixed questions

- 1 Student's answers.

18 Graphs

18.1 Gradient of a graph

- 1 a 0.05 b 250 c -0.02 d 40 e -125 f 20
 2 0.05, 0.2 and -0.1

18.2 The graph of $y = mx + c$

- 1 $Y = 4x + 10$
 2 $Y = 0.5x + 6$
 3 $Y = 2x - 12$
 4 $Y = -2x + 14$
 5 $Y = 0.2x - 10.8$
 6 $Y = 40x - 20$
 7 $Y = 0.1x - 12$
 8 $Y = 3x + 42$

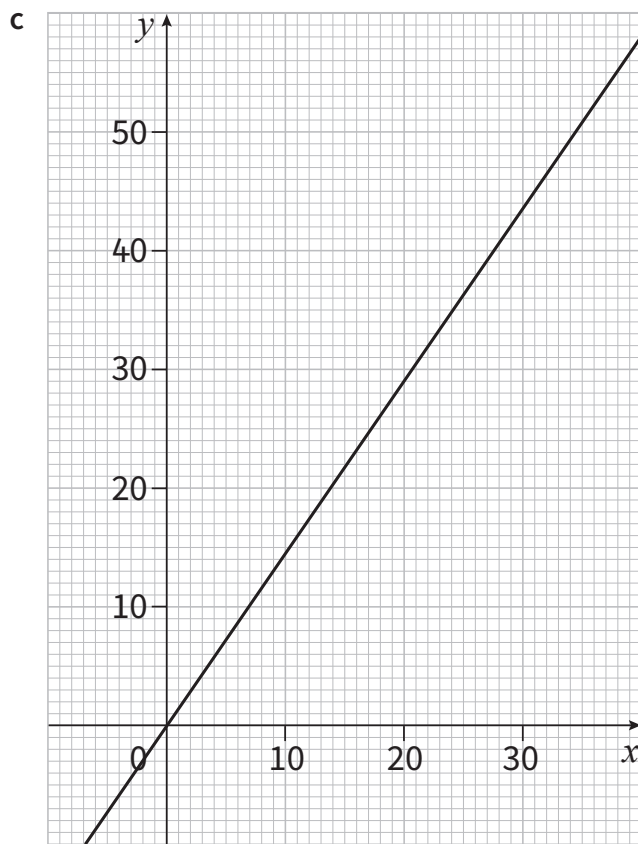
18.3 Direct proportion

- 1 a 2714.60 b 105.72
 2 a 975.60 b 1476.01

- 3 a 9248 b 81.74
 4 2177.18
 5 17063
 6 132.12

Mixed questions

- 1 $y = 3x - 10$
 2 A: $y = 2x + 3$ B: $y = 2x - 7$ C: $y = -\frac{1}{2}x + 8$ D: $y = -\frac{1}{2}x + 3$
 3 a \$22.04 b 1.45



The graph should have a title and axis labels.

- d 58.62 litres
 4 a (50, 0) b (0, 40) c -0.8

19 Interpreting and discussing results

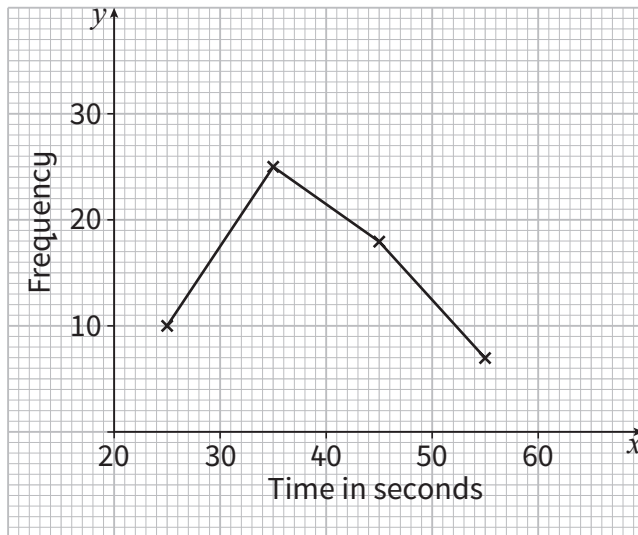
19.1 Interpreting and drawing frequency diagrams

1 a example

Time to solve puzzle, t (seconds)	Tally	Frequency	Midpoint
$20 \leq t < 30$		10	25
$30 \leq t < 40$		25	35
$40 \leq t < 50$		18	45
$50 \leq t < 60$		7	55

b example

Time students took to solve a puzzle

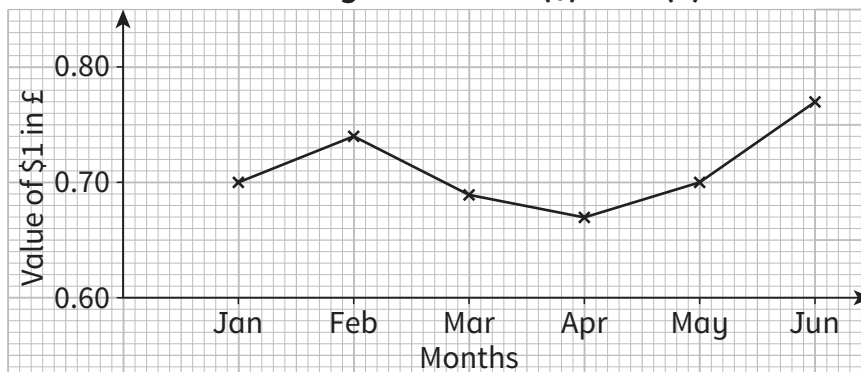


c example: The majority of students took less than 40 seconds to complete the puzzle

19.2 Interpreting and drawing line graphs

1 a example

Exchange rate of USA(\$) to UK (£)



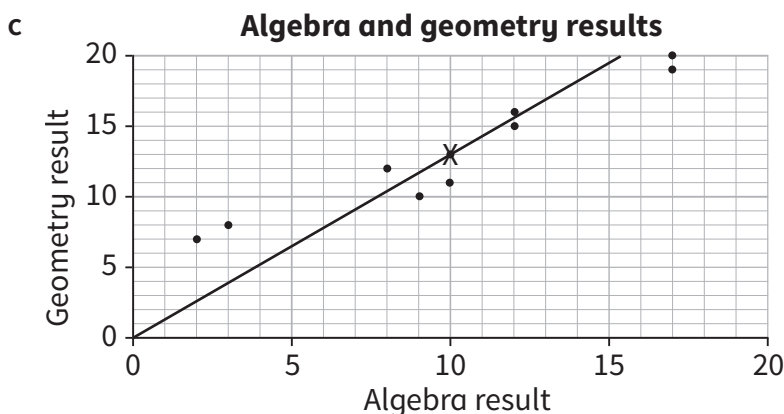
b i May to June ii February to March

c £888 d \$2000

- e i June as the rate is highest so you get more pounds for your dollars
- ii April as the rate is lowest so you get more dollars for your pounds

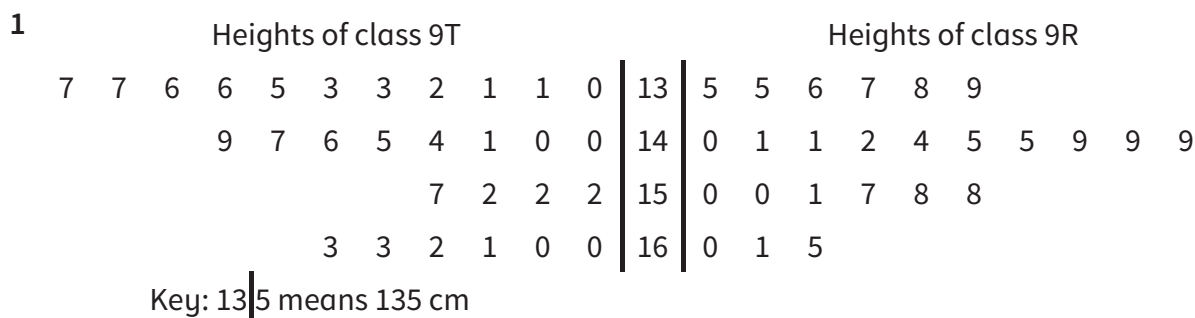
19.3 Interpreting and drawing scatter graphs

- 1 a 10
- b 13



- d example i 8 ii 11

19.4 Interpreting and drawing stem-and-leaf diagrams



	Range (cm)	Median height (cm)	Modal height (cm)	Mean height (cm)
Class 9T	33	144	152	145
Class 9R	30	145	149	147

- b example: On average, using the median and mean, class 9R were taller than class 9T.
- Class 9T had more variation in heights, and their modal height was taller than class 9R.

19.5 Comparing distributions and drawing conclusions

- 1 a i Los Narejos ii Los Arcos
- b i Los Narejos (number of patients over 60: Los Arcos 640, Los Narejos 700)
- ii Los Narejos (number of patients 20 and under: Los Arcos 480, Los Narejos 400)

- c example: Los Arcos has a lot more patients altogether, so even though they have a smaller proportion of under 20s the actual amount is greater than Los Narejos.

Mixed questions

1 a

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wheat price (c/bu)	580	500	540	460	500	620	500	540	460	540	460	500

b

Moving average four months	Jan Feb Mar Apr	Feb Mar Apr May	Mar Apr May Jun	Apr May Jun Jul	May Jun Jul Aug
Average price (c/bu)	520	500	530	520	540
Plot between	Feb & Mar	Mar & Apr	Apr & May	May & Jun	Jun & Jul

Moving average four months	Jun Jul Aug Sep	Jul Aug Sep Oct	Aug Sep Oct Nov	Sep Oct Nov Dec
Average price(c/bu)	530	510	500	490
Plot between	Jul & Aug	Aug & Sep	Sep & Oct	Oct & Nov

- c example: after the June/July average there is a general downward trend in the price of wheat

