BROAD HORIZON
TUITION

11+ Tuition

Year 5

Summer Booster Sessions

Maths

ANSWERS

Decimals
pp.20–21

1	0.04
2	34.8cm
3	D
4	30m
5	27.94cm
6	3.65g
7	0.735kg
8	4000 grains of rice
9	22.8 litres
10	B

Percentages
pp.22–23

1	440 girls
2	£300,000.00
3	E
4	2 questions
5	15%
6	£21.00
7	20%
8	306 miles
9	200 students
10	£3200.00
11	B

Ratio
pp.24–25

1	20°
2	12 sweets
3	C
4	800m
5	£45.00
6	D
7	£16.80
8	30 boys
9	125g
10	1006 books
11	B

Proportion
pp.26–27

1	£16.20
2	28 bunches
3	A
4	55g
5	6 girls
6	150 vehicles
7	4 racehorses
8	3 eggs
9	36 litres
10	2 litres
11	450g
12	B

Probability
pp.28–29

1	2 in 3
2	13 yellow marbles
3	B
4	5 in 8
5	12 counters
6	35 chocolates
7	2 red handkerchiefs
8	9 in 10
9	3 in 4
10	5 in 13
11	C

Area and perimeter
pp.30–31

1	128 tiles
2	36mm²
3	B
4	9 boxes
5	24m²
6	54m²
7	69.2m
8	12cm
9	32cm
10	A

Statistics
p.32–33

1	44
2	11 years old
3	A
4	26mm
5	43 years old
6	20°C
7	11
8	21°C
9	3 minutes 22 seconds
10	8 minutes 19 seconds
11	D

Measurement
pp.34–35

1	270,000cm
2	250g
3	E
4	54,000 seconds
5	75 miles
6	0.4lb
7	3 litres
8	12 cubes
9	175 hours
10	B

Speed, distance and time
pp.36–37

1	6mph
2	3360 miles
3	A
4	790m
5	6 metres per second
6	10 minutes
7	4 hours
8	660km
9	60 seconds
10	E

Geometry 1
pp.38–39

1	80°
2	118°
3	B
4	225°
5	8 vertices
6	60°
7	150°
8	12cm
9	65°
10	51cm
11	C

Geometry 2
pp.40–41

1	cuboid
2	210°
3	30°
4	14cm
5	30°
6	12 edges
7	4
8	120°
9	2
10	C

Data handling 1
pp.42–43

1	49 boys
2	18 children
3	E
4	15 children
5	23 children
6	0.75 million
7	12 hours
8	9 hours
9	30 minutes
10	A

Data handling 2
pp.44–45

1	65 children
2	38 children
3	C
4	720 people
5	23.2°C
6	2016
7	37 people
8	61 people
9	150,000
10	1 minute and 50 seconds

Data handling 3
pp.46–47

1	19°C
2	1426km
3	B
4	45 students
5	4 children
6	25%
7	87 points
8	60mm
9	13 lurchers
10	D

Coordinates
pp. 48–49

1	southwest
2	(–4,–1)
3	D
4	(4,3)
5	(0,2)
6	(2,5)
7	(0,0)
8	(3,3)
9	(3,2)
10	B

Algebra
pp. 50–51

1	22kg
2	$x = 10$
3	D
4	£50.00
5	400cl
6	24cm
7	–2
8	8 oranges
9	7 pieces
10	16 points
11	D

Mixed test 1
pp.52–53

1	18:58
2	3 children
3	C
4	33 votes
5	500mph
6	pages 353 to 384
7	£4.04
8	64%
9	62 passengers
10	49km
11	A

Mixed test 2
pp.54–55

1	60 cars
2	£109.45
3	53 minutes
4	4920g
5	21 passengers
6	4.0m
7	30 tractors
8	75%
9	330 people
10	Joe

Mixed test 3
pp.56–57

1	15:53
2	D
3	40m
4	36 pages
5	36 elephants
6	Saturday 15th June
7	40ml
8	£1.10
9	B
10	16 days
11	20:50

Mixed test 4
pp.58–59

1	27 questions
2	C
3	105 books
4	208 passengers
5	24,000g
6	£172.50
7	E
8	44cm
9	2nd September
10	£60,00

Mixed test 5
pp.60–61

1	49 black cars
2	72cm
3	£1176.00
4	B
5	£156.00
6	45
7	22 books
8	D
9	27 people
10	74 metres
11	10 hours
12	B

Extended answers
for Maths (ages 10–11)

Decimals (pp.20–21)

1	The correct answer is 0.68 but the cross is on 0.72. Counting forwards or backwards gives four hundredths, or 0.04.
2	7.5 + 2.7 = 10.2cm. 45 – 10.2 = 34.8cm
3	D. 1.273 – 0.398 = 0.875. This is the inverse of 0.875 + 0.398 = 1.273. (1.273 – 0.875 = 0.398 is also the inverse, but this is not given in the list of options.)
4	To work out 200 × 0.15, first multiply by 100, then double the answer. 100 × 0.15 = 15m. 15 × 2 = 30m
5	The combined length of the three sticks is 11 inches. To work out 11 × 2.54, break it down as follows. 10 × 2.54 = 25.4. 11 × 2.54 = 25.4 + 2.54 = 27.94cm
6	7.6 – 3.95 = 3.65g Counting back, 7.6 to 4 = 3.6, then 4 to 3.95 = 0.05, so 3.6 + 0.05 = 3.65.
7	735 ÷ 1000 = 0.735kg because the decimal place moves three places to the left.
8	Each grain of rice weighs 0.025g. Multiplying this by 1000 = 25g. There are 1000 grains per person × 4 = 4000 grains of rice in total for the family.
9	1 barrel holds 8 pints, so 5 barrels hold 40 pints. To work out 40 × 0.57, multiply by 10 and then by 4. 10 × 0.57 = 5.7. 5.7 × 4 = 22.8 litres
10	B. 1 laptop weighs 2.5kg, so 100 laptops weigh 250kg. 2 × 250 = 500kg.

Percentages (pp.22–23)

1	800 × 45% = 360 boys. Girls will be 800 – 360 = 440 girls
2	If £15,000 is half of the required deposit, the deposit must equal £30,000 (£15,000 × 2 = £30,000) If £30,000 is 10% of the price of the apartment, then the apartment must cost £30,000 × 10 = £300,000.00.
3	E. 20% of 40 = 8, so 8 marbles are green. 60% of 40 = 24, so 24 marbles are blue. 24 + 8 = 32. Therefore, 40 – 32 = 8.
4	The best method is to calculate 5% of 40 (2). Florrie got 2 questions wrong.
5	The cost reduction is £90.00 – £76.50 (£13.50). 10% of £90 = £9.00, therefore 5% = £4.50. £9.00 + £4.50 = £13.50. So the answer is 15%.
6	10% of £15 = £1.50. Therefore, 40% = £1.50 × 4 (£6). £15 + £6 = £21.00

7	The total cost of books is £45. William's profit is £54 – £45 (£9) £9.00 ÷ £45 equals $\frac{1}{5}$ as a fraction, which is equal to 20%.
8	10% of 360 miles = 36 miles. 5% of 360 miles = 18 miles. Therefore, the family must have travelled 36 + 18 miles (54 miles). 360 miles – 54 miles = 306 miles
9	10% of 250 = 25, so 20% = 25 × 2 (50). If 50 children have school lunches, then the students taking a packed lunch must be 250 – 50 = 200 students.
10	If Ejaz pays 80% of his bonus into his bank account, he must give 20% of the money to his children. If 20% is £640, 10% must be £320. 100% must be £320 × 10 = £3200.00
11	B. 1% of 1500 = 15. Therefore 7% must be 15 × 7 = 105.

Ratio (pp.24–25)

1	180° degrees ÷ 9 = 20°. Therefore, two of the angles will each measure 80° and the third, smallest, angle will measure 20°.
2	Olive has 45 sweets left after keeping 5 for herself. One-third of 45 = 15, therefore she will have 45 – 15 (30) left after giving sweets to her sister Flo. 30 divided in the ratio 6:4 equals 18:12, therefore Sophie will receive 12 sweets.
3	C. The number of sheep to cows is given as 40:24. In its simplest form, this would be 5:3 as the largest factor of both 40 and 24 is 8.
4	As the track is 400 metres, the slower athlete will be lapped when the distance between the two runners reaches 400 metres. The faster runner will cover 300 metres while the slower runner covers 200 metres, then 600 metres and 400 metres, then 900 metres and 600 metres, then 1200 metres and 800 metres. At this point, there is 400 metres between the two runners and the slower athlete will have been lapped. The answer is 800 metres.
5	If the cheapest jeans are 1 unit of the ratio and cost £15, the jeans costing 3 units of the ratio must be £15 × 3 = £45.00.
6	D. There are four sides in a square and there are six faces on a cube, therefore the ratio is 4:6, which is simplified to 2:3.
7	A ratio of 3:5 is equal to 9:15. This means that Kieran will have nine 20p coins (£1.80) and £15.00 in his pocket. £15.00 + £1.80 = £16.80.
8	6 + 5 = 11. 66 ÷11 = 6. Multiply 5 by 6 to find the number of boys (30 boys).
9	If Kiana uses 100g of sugar, she will need 25% more flour, which is 125g.

10	To calculate the number of fiction books, divide 2265 by 5 (2 + 3) which equals 453. Then multiply by 2 (906). To calculate the number of non-fiction books, multiply 453 by 3 (1359). The number of non-fiction books left by the end of the week must be 1359 – 353 = 1006 books.
11	B. Divide 32 by 4 (3 + 1), which equals 8. Therefore, the number of girls in the class is 8.

Proportion (pp.26–27)

1	Divide £48.60 by 6 to determine the cost of one portion (£8.10) and multiply the answer by 3 to calculate the cost of two portions. £8.10 × 2 = £16.20
2	This is the same as saying that the florist sells two-thirds as many roses as daffodils. $\frac{2}{3}$ of 42 = 28 bunches
3	A. If there are five laptops to every computer and there are four computers, there must be 5 × 4 laptops (20). The total number of laptops and computers must equal 20 + 4 (24).
4	The recipe is for 12 vanilla cupcakes. To make six cupcakes, you need to halve the quantity of the ingredients. 110g ÷ 2 = 55g
5	15 ÷ 5 = 3. Therefore, there are 2 × 3 = 6 girls.
6	This is the same as saying $\frac{3}{7}$ of the cars manufactured are white. One-seventh of 350 is 50, so three-sevenths is 50 × 3 = 150 vehicles.
7	This is the same as saying $\frac{1}{6}$ of the racehorses are grey. $\frac{1}{6}$ of 24 = 4 racehorses
8	Clara needs to increase the amounts of each ingredient by 50%. 50% of 2 = 1. Therefore, Clara will need 2 + 1 = 3 eggs.
9	225km ÷ 50km = 4.5km 8 × 4.5 = 36 litres
10	The proportions of paint are 1:4. The painter would need 2 litres of 'Midnight Blue'.
11	300g of smoked haddock will serve four people, therefore Daniel has to increase the amounts of all the ingredients by 50%. 50% of 300g = 150g, therefore the amount needed to serve six people would be 300g + 150g = 450g.
12	B. Lucy can read 20 pages of her book in 10 times as much time as she can read two pages. The answer must be 5 minutes and 12 seconds × 10. 5 minutes × 10 = 50 minutes. 12 seconds × 10 = 120 seconds (2 minutes). The answer must be 50 minutes + 2 minutes = 52 minutes.

Extended answers
for Maths (ages 10–11)

Probability (pp.28–29)

1	He can roll 1, 2 , 3 or 4, but not 5 or 6. There are 4 out of 6 possibilities, which simplifies to 2 in 3.
2	An even chance would be 1:1 (or 24:24), so there would need to be 13 more yellow marbles to make an even chance.
3	B. The probability is 4 in 52, which, when simplified, is 1 in 13.
4	There are 16 cars altogether (2 + 3 + 7 + 4); 3 blue + 7 black = 10 cars. The probability of a blue or black car is 10 in 16, which simplifies to 5 in 8.
5	A 1 in 5 chance of picking blue from 15 counters means that in every 5 counters, 1 is blue, so there must be 3 blue counters. So, 12 counters are not blue.
6	If there are 7 caramels in the bag, and 1 in 5 of the chocolates are caramel, then there must be 5 × 7 = 35 chocolates altogether.
7	There are 8 white handkerchiefs with a 4 in 7 chance of pulling white from the drawer. There must be 14 handkerchiefs in the drawer (4 in 7 is 8 in 14 simplified). 8 white + 3 blue + 1 black = 12 handkerchiefs, so there must be 2 red handkerchiefs.
8	5 out of 50 cakes have only two cherries on top. This is a probability of 1 in 10. 9 in 10 have three cherries on top, which is the probability for the first customer of the day to have a cake with three cherries.
9	1 in 4 beads are blue. The probability of not picking a blue bead must be 3 in 4.
10	There are 20 + 15 + 17 = 52 blocks altogether. 20 in 52 simplifies to 10 in 26, which simplifies to 5 in 13.
11	There are 24 children in the class and the probability of choosing a girl is 7 in 12. This means that for every 12 children, 7 are girls, so there must be 14 girls in the class as 24 –14 = 10 boys.

Extended answers
for Maths (ages 10–11)

Area and perimeter (pp.30–31)

1	16 tiles would be needed to tile the length of the floor. 8 tiles would be needed to tile the width of the floor. 16 × 8 = 128 tiles
2	Separate the compound shape into two smaller shapes. One of the shapes will have area of 4mm × 6mm (24mm²) and the other shape will have an area of 4mm × 3mm (12mm²). Add the areas of the two shapes together to arrive at the answer: 36mm².
3	B. To calculate the area, the width needs to be multiplied by the length. If a 2D shape has an area of 480cm² and one of its sides measures 12cm, its other side must measure 480 ÷ 12 = 40. The perimeter of the rectangle will therefore be 12cm + 40cm + 12cm + 40cm = 104cm.
4	Separate the compound shape into two smaller shapes. The first shape will measure 4m × 9m and the other shape will measure 3m × 5m. For the first shape, 8 slabs will be required for the smaller measurement and 18 for the larger measurement. (8 × 18 = 144). For the other shape, 6 slabs will be required for the smaller measurement and 10 for the larger measurement. (6 × 10 = 60). 144 + 60 = 204 slabs required in total. Slabs come in boxes of 24, therefore 9 boxes would be needed (giving a total of 216 slabs).
5	The area of a triangle is equal to its base divided by 2. The larger triangle will have an area of (3m × 9m) ÷ 2 = 13.5m². The smaller triangle will have an area of (3m × 7m) ÷ 2 = 10.5m². 13.5m² + 10.5m² = 24m²
6	Leila's living room is 6m wide and the length is 1.5 × the width. The length must be 6 × 1.5 = 9m. The area is 9m × 6m = 54m².
7	Perimeter is the distance around the outside of a shape. The perimeter will be 10.5m + 24.1m + 10.5m + 24.1m = 69.2m.
8	The area of a rectangle is calculated by multiplying the width by the length. If the area is 84cm² and the width is 7cm, the length must be 84 ÷ 7 = 12cm.
9	The perimeter is the distance round the outside of a shape. The missing measurements are 4.5cm and 3cm. The perimeter can be calculated by adding 8.5cm + 4.5cm + 3cm + 3cm + 3cm + 3cm + 2.5cm + 4.5cm = 32cm.
10	A. The total area of the lawn and patio is 9 × 9 = 81m2. The area of the patio is 4.5 × 6=27m2, so the area of grass is 81 – 27 = 54m2. 100g of seed for 6m2 means 54 ÷ 6 = 9, so 900g of seed is needed.

Extended answers
for Maths (ages 10–11)

Statistics (pp.32–33)

1	If the mean (average) score is 30, the total for the four tests must equal 120. Three of the tests total 76. Therefore, the score for the fourth test must be 120 – 76 = 44
2	If the range of the three children is 5 and the youngest is 6, Freddie must be 6 years + 5 years = 11 years old.
3	A. 140cm + 124cm + 162cm = 426cm. 426cm ÷ 3 = 142cm
4	12mm + 25mm + 38mm + 43mm + 22mm + 16mm = 156mm. 156mm ÷ 6 = 26mm
5	If the mean (average) age is 42, the three ages must add up 126. 38 + 45 = 83. 126 – 83 = 43 years old
6	If the mean (average) temperature is 17°C, the four temperatures must add up to 68°C. 16°C + 14°C + 18°C = 48°C. 68°C – 48°C = 20°C
7	The median of a set of numbers is the middle value in a set of data. Arranged in order of smallest to largest the numbers are: 7, 8, 10, 11, 11, 12, 12, 13, 14. The middle number (median) is 11.
8	The range is the difference between the highest and lowest temperature. 18°C to –3°C = 21°C.
9	The range is the difference between the fastest and slowest times. The fastest time is 39.18 and the slowest time is 42.40. 42.40 – 39.18 = 3 minutes 22 seconds
10	Add the 1k distances: 8.44 + 7.45 + 7.53 + 8.54 = 31.96, which needs to be expressed in minutes and seconds (33.36). 33.36 ÷ 4 = 8 minutes and 19 seconds
11	D. The mode is the value or item that occurs most often in a set of data. The number 6 occurs three times, 8 occurs once, 11 occurs three times, 12 occurs four times and 13 occurs once. The mode is 12.

Measurement (pp.34–35)

1	Convert km to m (× 1000): 2.5km = 2500m. 2500 + 200 = 2700m for the total journey. Convert m to cm (× 100): 270,000cm.
2	If six sacks weigh 150kg, then one sack weighs 150 ÷ 6 = 25kg. If there 100 potatoes per sack, then the average potato weight is 25 ÷ 100 = 0.25kg. To convert to grams, multiply by 1000: 0.25 × 1000 = 250 grams.
3	E. Total drainage every hour will equal 40cl × 4 =160cl. 8 litres is equal to 800cl. 800 ÷ 160 = 5
4	There are 60 minutes in 1 hour. Convert minutes to seconds = 60 × 60 = 3600 seconds per hour. To find the seconds in 15 hours: 10 × 3600 = 36,000. Then add half of this again: 36,000 + 18,000 = 54,000 seconds.

Extended answers
for Maths (ages 10–11)

5	Using the graph, we can see that 5 miles is equivalent to 8km. This is the only accurate reading. We can deduce that 80km = 50 miles. 120km = 80km + 40km, or 50 miles + 25 miles = 75 miles
6	Convert the digital scale kg to lbs: 4.5kg × 2.2 = 9.9lbs. (1kg = 2.2lbs, so 0.5kg = 1.1lbs; 4 × 2.2 = 8.8 + 1.1 = 9.9lbs.) Subtract the balance scale to find the difference: 10.3 – 9.9 = 0.4lbs.
7	12 cups holding 100ml each is 1200ml. The jug holds 1.5l (or 1500ml). 1200 + 1500 = 2700ml The bowl still has 300ml in it, so 300 + 2700 = 3000ml or 3 litres.
8	Total volume of the shape: 4cm × 12cm × 2cm = 96cm³ Total volume of a cube: 2cm × 2cm × 2cm = 8cm³ 96cm³ ÷ 8cm³ = 12 cubes
9	200g per hour gives 1kg every five hours (1000g = 1kg). A 35kg block will take 35 × 5 = 175 hours to melt completely.
10	B. The volume of one pyramid: $\frac{1}{3} \times 7 \times 6 \times 10 = \frac{420}{3} = 140$ cm³ The volume for two pyramids is 2 × 140 = 280 cm³.

Speed, distance and time (pp.36–37)

1	Speed = distance ÷ time. 21 miles ÷ 3.5 hours = 6mph
2	Distance = speed × time. 560 miles × 6 hours = 3360 miles
3	A. Time = distance ÷ speed. 80 ÷ 50 = 1.6 1.6 hours = 1 hour and 36 minutes
4	The shortest route would be past the gift shop. 380m + 410m = 790m
5	Speed = distance ÷ time. 300 ÷ 50 = 6 metres per second
6	Jen walks at 4km per hour, which is 1km every 15 minutes, so she takes 30 minutes to walk 2km. Tom walks at 3km per hour, which is 1km every 20 minutes, so he takes 40 minutes to walk 2km. Tom arrives 40 – 30 = 10 minutes after Jen.
7	Budapest to London is 1000 miles. Flying at 250mph, either divide 1000 by 250 or count in 250s (250 + 250 + 250 + 250 = 1000). The journey takes 4 hours.
8	Distance = speed × time. 110 km x 6 hours = 660 km
9	The total perimeter is (80 + 40) × 2 = 240m. Harry runs at 4 metres every second, so it will take 240 ÷ 4 = 60 seconds.
10	E. Time = distance ÷ speed. 30 ÷ 45 = 0.666r , which is closest to 40 minutes in the options given.

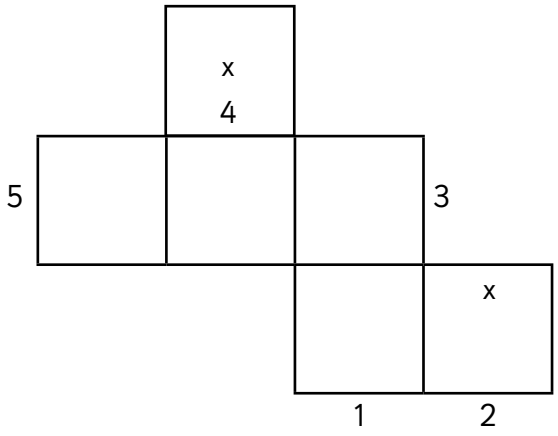
Extended answers
for Maths (ages 10–11)

Geometry 1 (pp.38–39)

1	If two of the angles measure 50°, they will total 100°. Angles in a triangle add up to 180°. 180° – 100° = 80°
2	If two of the angles measure 34° and 28°, they will total 62°. Angles in a triangle add up to 180°. 180° – 62° = 118°
3	B. The two angles marked a measure the same as each other. Angles on a straight line add up to 180°. 180° – 112° = 68° 68° ÷ 2 = 34°
4	There are 360° in a circle. The right angle is 90° and the acute angle is 45°: 90 + 45 = 135°. The obtuse angle is 360 – 135 = 225°.
5	Vertices are where three or more sides meet. A cube has 8 vertices.
6	In a regular hexagon, all the sides are of equal length. The interior triangles are all equilateral. Angles in an equilateral triangle are all equal. Angles in a triangle add up to 180°. 180° ÷ 3 = 60°
7	There are 12 numbers representing each hour on an analogue clock. The angles between each hour will be 360° ÷ 12 = 30°. 5 hours = 30° × 5 =150°
8	Two diameters = 48cm, so one diameter = 24cm. The radius is half the diameter, giving 12cm.
9	Angles formed on alternate sides of a transversal between parallel lines are equal. The answer is 65°.
10	Isosceles triangles have two sides of identical length. Because they are right-angled, and also the same length as the square, the bottom length of each triangle must also be 17cm. The base of the trapezium is two triangle lengths and one square length, which is 17 + 17 + 17 = 51cm.
11	C. Regular polygons have the same number of lines of symmetry as they have sides. A regular octagon has 8 sides, so the answer is 8.

Extended answers
for Maths (ages 10–11)

Geometry 2 (pp.40–41)

1	A cuboid is a 3D shape.
2	There are 12 numbers representing each hour on an analogue clock. The angles between each hour are 360° ÷ 12 = 30°. A reflex angle measures between 181° and 359°. The reflex angle is 30° × 7 =210°.
3	The angle at the vertex (corner) of a square is 90°, and the angle at the vertex of an equilateral triangle is 60°, so angle c = 30°.
4	A regular pentagon has five sides. 70 ÷ 5 = 14cm
5	The three angles of a triangle add up to 180°, so a + b must equal 90°. Angle a is twice angle b, so 2 b + b = 90°. So, if 3b = 90°, b =30°.
6	12 edges – four on each 'end' face, and four edges connecting these faces.
7	Only sticking the final square at side 4 will produce a correct net. The sides marked X will then join together when the net is folded. (Note that side 5 will join to side 1.) 
8	Looking at the centre and considering one of the diagonals, angles on a straight line add up to 180°. The smaller angle is 60° because it is an equilateral triangle, so x must be 120°.
9	The only shared lines of symmetry for a square and a hexagon are the horizontal and vertical lines. So, there are two lines of symmetry.
10	All four sides of a rhombus are identical. Counting around the side of the parallelogram gives 6b.

Extended answers
for Maths (ages 10–11)

Data handling 1 (pp.42–43)

1	The number of right-handed girls is 48 – 4 = 44. The total number of boys is 100 – 48 = 52. The total number of right-handed children is 100 – 7 = 93. The total number of right-handed boys is 93 – 44 =49 boys.
2	360° ÷ 90 = 4° per child. 72° ÷ 4° = 18 children
3	E. 30 out of 90 children is one-third. One-third of 360° is 120°.
4	7 + 8 + 3 + 6 + 12 + 9 = 45. 60 – 45 = 15 children
5	Adding the numbers where sets intersect, but not the central three-fruit intersection, gives 6 + 8 + 9 = 23 children.
6	Paris = 2.15 million, Rome = 2.9 million Counting on from 2.15 (or subtracting if preferred) gives 0.75 million.
7	3 × 4 = 12 hours
8	Adding all the icons, we have 15. Each represents 3 hours, so 3 × 15 = 45 hours in total. Divide 45 hours by 6 months = 7.5 hours per month on average .
9	The morning is 3 hours, and the afternoon 2.5 hours, so the morning is 30 minutes longer.
10	A. In total there are 5.5 hours of lessons each day. 5.5 × 180 is equivalent to 55 × 18, which equals 990 hours.

Data handling 2 (pp.44–45)

1	28 children have packed lunches, 37 children have school lunches, and 14 go home. Therefore, 28 + 37 = 65 children stay in school for their lunch.
2	60% of 5 = 3. The total owning a phone will then be 14 + 21 + 3 = 38 children.
3	There are 14 children who own a laptop and a phone, out of a total of 63. For 14 in 63, both can be divided by 7, which can be simplified to 2 in 9.
4	48% of 1500 = 720 people.
5	Add the five temperatures together: 24 + 22 + 21 + 23 + 26 = 116. To find the average, divide by 5 days. 116 ÷ 5 = 23.2°C
6	In 2016, 51 + 75 = 126 people had holidays. In 2017, 67 + 55 = 122 people had holidays. In 2018, 82 + 33 = 115 people had holidays. 2016 saw the greatest number of people having a holiday.

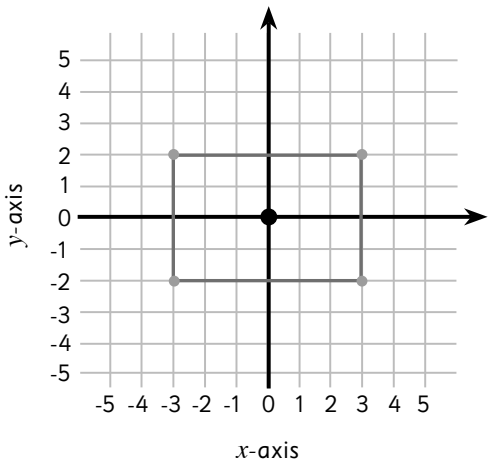
7	In 2016, 24 more went abroad. In 2017, 12 more stayed in the UK. In 2018, 49 more stayed in the UK. 49 + 12 – 24 = 37 people (Alternatively, add the total who stayed at home then subtract the total who went abroad.)
8	In 2017, 67 + 55 = 122 people had holidays. If this number was shared equally for 2019, 122 ÷ 2 = 61 people holidayed in the UK that year.
9	5 badger symbols represent 5 × 100,000 = 500,000. 3.5 fox symbols represent 3.5 × 100,000 = 350,000. There are 500,000 – 350,000 = 150,000 more badgers.
10	Each square on the x-axis represents 10 seconds. 100°C is reached after 1 minute 50 seconds.

Data handling 3 (pp.46–47)

1	The minimum temperature in the year is 9°C (July and August). The maximum temperature is 28°C (November and December). The difference is 28 – 9 = 19°C.
2	The distance between Rome and Milan is 575km. The distance between Milan and Paris is 851km. 575km + 851km = 1426km
3	B. Paris to Lisbon is 1735km. Madrid to Lisbon is 627km. Antoinette drives 1735 – 627 = 1108km further.
4	360° ÷ 90° = 4°. 180 ÷ 4 = 45 students
5	Reading the bar chart, 18 children walk, 8 travel by bus, 1 by bike and 5 by car. So, 18 – 8 – 1 – 5 = 4 more children walk than use any other transport.
6	8 out of a total of 32 children travel by bus. Simplifying, this is 1 out of 4, which is a quarter, or 25%.
7	Adam has 91 points and Caitlin has 83 points for the spring term. To find the average of 91 and 83, either add them and divide by 2, or find the difference, halve it, and then add it on. The difference is 8. Half of 8 is 4, so 83 + 4 = 87 points.
8	Rainfall in May = 12mm × 8 = 96mm. Rainfall in September = 12mm × 3 = 36mm. 96mm – 36mm = 60mm
9	A complete circle is 360°, so if there are 36 dog places altogether, the chart has 10° per space. The sector of the pie chart for lurchers is 130°. Therefore, there are 130° ÷ 10 = 13 lurchers.
10	D. There are already 2 empty spaces, so with 4 greyhounds and 2 lurchers leaving there will be a total of 8 empty spaces. Each space is 10°, so the new sector will be 80°.

Extended answers
for Maths (ages 10–11)

Coordinates (pp.48–49)

1	North – 135° = south-west
2	Reflecting the point (4,1) in the vertical y-axis gives the point (–4,1). Then, reflecting this in the horizontal x-axis gives (–4,–1).
3	D. To translate (–3,–4) by (7,4), add 7 to –3, giving 4, and 4 to –4, giving 0. The new point is (4,0).
4	The new coordinates will be (4,3).
5	To get from (5,3) to the x-axis, go down 3. Then, to keep the lines parallel go back 3. This gives the point (0,2) on the x-axis.
6	When reflecting in a horizontal line (y = 3) the x coordinate remains the same, so simply count up to the line (1 to 3 is two squares) then repeat this beyond the line, with two further squares going to (2,5).
7	
8	The coordinates of the point exactly halfway between the gym and the cafe will be (3,3).
9	The new coordinates will be (3,2).
10	B. Starting at (2,1) and going 4 along and then 4 up will give (6,5).

Extended answers
for Maths (ages 10–11)

Algebra (pp.50–51)

1	Ben = x. Harry = (x + 3). Tom = (x + 5). 3x + 8 = 65kg. $3x$ = 65 – 8. $3x$ = 57kg. x = 19kg. Harry weighs 22kg.
2	$2x$ – 8 = 12. $2x$ = 12 + 8. $2x$ = 20. x = 10
3	y is 5 so $3y$ = 15, so the x term must equal 8 because 15 + 8 = 23. Now, x is –2 so it must be $-4x$ (–2 × –4 = +8). So, $3y - 4x$ = 23 is correct.
4	Rex = x. Sam = $2x$. Neha = $4x$. Total $7x$. x = £100. Rex will receive £100 and be saving half of this, which is £50.00.
5	25 × 30 × 2 (children) + 100 (teacher). 1500 + 100 = 1600cl. 1600 ÷ 4 = 400cl
6	The longest sides could be expressed as $2x$ and the shorter sides as x. $2x + 4x = 6x$. 72cm ÷ 6 = 12cm. The longer sides will be 24cm.
7	$3y$ + 4 × 7 = 22, so $3y$ = 22– 28, so $3y$ = –6, so y = –2.
8	Oranges (£1.00 each) + bread (£1.10) + milk (80p) = £10 – change. Oranges × £1.00 + £0.90 = £10 – £0.10 So, oranges × £1.00 = £10 – £.010 – £1.90 = £8. Josh bought 8 oranges.
9	Number of pieces = 56 ÷ 8 = 7
10	The children receive one piece for every eight points: 2 × 8 = 16
11	D. The children receive one piece for every eight points: 11 × 8 = 88

Mixed test 1 (pp.52–53)

1	The clock which is slow is the one showing the earlier time. 18:47 + 11 minutes equals 18:58.
2	The number of children owning a cat and a dog is 9. 12 – 9 = 3 children
3	C. Each line on the scale represents 0.01. 7.25 + 0.06 = 7.31.
4	14% + 24% + 40% = 78%. Syd must have received 100% – 78% = 22%. 22% of 150 = 33 votes
5	Speed = distance ÷ time. 6500 ÷ 13 = 500mph
6	512 ÷ 16 = 32. Chapter 11 will finish on page (11 × 32) 352. Chapter 12 will begin on page 353 and end 32 pages later on page 384.

Extended answers
for Maths (ages 10–11)

7	Four 50p coins (£2.00), eight 20p coins (£1.60), four 10p coins (40p), two 2p coins (4p). £2.00 + £1.60 + 40p + 4p = £4.04
8	There are 50 squares and 32 squares are shaded. $\frac{32}{50} = \frac{64}{100}$. 64%
9	60 – 15 = 45. 45 + 25 = 70. 70 – 8 = 62 passengers
10	3km + 4km = 7km. 7km × 7 (the number of days in a week) = 49km
11	A. 21 × 8 = 168 flowers

Mixed test 2 (pp54–55)

1	If three-quarters of the cars are black, then one-quarter of the cars are other colours. One quarter of 240 = 60 cars
2	£15.80 + £12.20 + £11.75 + £18.30 + £16.70 + £20.20 + £14.50 = £109.45
3	The 18:33 train journey takes 58 minutes. The 18:40 train journey takes 60 minutes. The 18:46 train journey takes 53 minutes. The fastest train takes 53 minutes.
4	120g × 14 (the number of days in a fortnight) = 1680g. 3240g + 1680g = 4920g
5	300 × 7% = 21 passengers
6	$30m^2 \div 7.50 = 4$. The kitchen has a width of 4.0m.
7	There were 15 tractors on Monday and 45 tractors on Saturday. Therefore, there were 30 fewer tractors on Monday.
8	$\frac{15}{60}$ is equal to one-quarter or 25%. 100% – 25% = 75%
9	Brad + 2 actors + 43 actors + 240 extra actors + 48 production staff = 334. Rounded to the nearest ten is 330 people.
10	Joe's journey takes 32 minutes. Neil's journey takes 31 minutes. The boy who has the longest journey is Joe.

Extended answers
for Maths (ages 10–11)

Mixed test 3 (pp.56–57)

1	The flight takes 43 minutes + 7 minutes = 50 minutes. 15:03 + 50 minutes = 15:53
2	D. The tickets will cost 1 adult fare plus 3 children's fares. £11.75 + (£8.50 × 3) = £25.50. £11.75 + £25.50 = £37.25
3	11m + 5.5m + 2.5m + 2m + 6.5m + 3.5m + 2.m + 7m = 40m
4	34 + 39 + 27 + 56 + 42 + 24 + 30 = 252 pages. 252 ÷ 7 = 36 pages
5	20% of 30 = 6. There are 30 + 6 elephants = 36 elephants.
6	The boys meet on Saturday 1st June. The next dates that Peter will visit the pool in June will be Saturday 8th June and Saturday 15th June. The next dates that Max will visit the pool in June will be Monday 3rd, Wednesday 5th, Friday 7th, Sunday 9th, Tuesday 11th, Thursday 13th and then Saturday 15th June.
7	The median of a set of numbers is the middle value in a set of data. Arranged in order of smallest to largest, the amounts are will be 25ml, 35ml, 40ml, 40ml, 45ml, 60ml, 75ml. The middle number (median) is 40ml.
8	Mr Mohamed's newspaper bill for the other six days of the week is £9.40 – £2.80 = £6.60. £6.60 ÷ 6 = £1.10
9	B. If 40% of the doughnuts have been eaten, 60% must be left. 60% of 25 = 15
10	The workmen will take (4000 ÷ 250) days. 16 days
11	18:40 + 25 minutes = 19:05. 19:05 + 90 minutes = 20:35. 20:35+ 15 minutes = 20:50

Mixed test 4 (pp.58–59)

1	Joshua must have got 45% of the exam incorrect. 45% of 60 = 27 questions
2	C.Swati's change would have been £2.80. £2.80 ÷ 20p = 14
3	Sales for 1st March = 35, 2nd March = 15, 3rd March = 30 and 4th March = 25. 35 + 15 + 30 + 25 = 105 books
4	20% of 260 = 52. 260 – 52 = 208 passengers
5	The larger bag of potatoes weighs (3 × 6kg) = 18kg. 6kg + 18kg = 24kg or 24,000g.
6	One bar stool costs £230.00 ÷ 4 = £57.50. Three bar stools will cost £57.50 × 3, which is £172.50.

Extended answers
for Maths (ages 10–11)

7	E. £140 × 20% = £28. Samara will have to pay £140 – £28 = £112
8	7cm + 3cm + 4cm + 8cm + 5cm + 6cm + 6cm + 5cm = 44cm
9	23rd August + ten days (there are 31 days in August) = 2nd September
10	600 Thai baht is equal to £30. Therefore, 1200 Thai baht must equal £60.00.

Mixed test 5 (pp.60–61)

1	21 ÷ 3 = 7. 7 × 7 = 49 black cars
2	20% of 90cm = 18cm. 90cm – 18cm = 72cm
3	The total bill will be £280 + (£175× 4) = £980. 20% of £980= £196. £980+ £196= £1176.00
4	B.North – 90° anti-clockwise = west
5	£336 – £24 = £312. £312 ÷ 2 will give the lower amount of £156.00.
6	142 – 7 = 135. 135 ÷3 = 45
7	57cm ÷ 2.5cm = 22.8. Toby can fit 22 books on his bookshelf.
8	D. 82 + 79 + 89 = 250. 250 + 48 = 298
9	If $\frac{5}{8}$ of people preferred to watch movies at home, then $\frac{3}{8}$ preferred the cinema. $\frac{3}{8}$ of 72 = 27 people
10	11 metres + 26 metres + 11 metres + 26 metres = 74 metres
11	If Mumbai is $5\frac{1}{2}$ hours ahead of London, Stella's flight must have taken off at 03:30 London time. 03:30 to 13:30 = 10 hours
12	B. £7.50 ÷ 3 = £2.50 for each child. Then Zak earns an extra £3.50. The total he earned is £6.00.

Maths Paper A

1.	13
2.	2
3.	E
4.	$21m^2$
5.	4
6.	$^1/_8$
7.	D
8.	17°C
9.	51
10.	C
11.	B
12.	5
13.	0.7kg
14.	D
15.	C
16.	0.049
17.	£5.65
18.	22m
19.	60%
20.	C
21.	C
22.	60
23.	198
24.	D
25.	£3
26.	B
27.	13
28.	C
29.	Friday
30.	SW
31.	$^1/_6$
32.	3
33.	60p
34.	$^3/_4$
35.	159°
36.	16
37.	11:27
38.	88
39.	$33m^2$
40.	3
41.	D
42.	1 : 200
43.	5
44.	$^2/_6$
45.	15m
46.	5.674
47.	3,434
48.	644
49.	£57.66
50.	11 mins

Maths Paper B

1.	26.5 litres
2.	2
3.	0.81kg
4.	$36m^2$
5.	D
6.	8
7.	C
8.	621.74
9.	72
10.	E
11.	11:10
12.	B
13.	23
14.	27
15.	A
16.	15
17.	15
18.	49p
19.	C
20.	$816cm^3$
21.	72
22.	D
23.	9
24.	8
25.	D
26.	$^4/_9$
27.	x + 18
28.	39
29.	A
30.	S
31.	C
32.	B
33.	$^1/_5$
34.	225°
35.	D
36.	B
37.	£15
38.	$176m^2$
39.	91
40.	E
41.	£1.44
42.	90km
43.	£36
44.	C
45.	£7.90
46.	$80cm^3$
47.	Apples
48.	15m
49.	C
50.	2:15pm