Answers

Key abbreviations:

°C	degrees Celsius
m	metre
cm	centimetre
mm	millimetre
km	kilometre
kg	kilogram
ml	millilitre
kph	kilometres per hour
d.p.	decimal places

TEST 1

Q1 **B**

Thousands	Hundreds	Tens	Ones
9	8	4	2

Q2 **C**

The rule is 'add 8' each time.

Missing number = 571 + 8 = 579

Q3 **D**

Number of rectangles that fit left to right:

32 m ÷ 16 m = 2

Number of rectangles that fit top to bottom:

32 m ÷ 8 m = 4

Number of rectangles to fill square = 2 × 4 = 8

Q4 **D**

7 cm ÷ 100 = 0·07 m

Garth's height = 1·32 m + 0·07 m = 1·39 m

Q5 **E**

Shape consists of 10 identical squares, 4 of which are shaded.

Fraction shaded = $\frac{4}{10} = \frac{2}{5}$

Q6 **D**

$7453 \div X = 7453$

Any number divided by 1 equals itself, so $X = 1$

Q7 **A**

$a + 8 = 17 + 15$

$a + 8 = 32$

$a = 32 - 8 = 24$

Q8 **C**

Number of weeks = £60 ÷ £7·50 = 8

Q9 **D**

Groups that contain more than 20 students:

B, C, D, E, H, I, J

7 groups contain more than 20 students.

Q10 **D**

Diameter = 2 × radius

Radius of Circle A = 2 × diameter of Circle B

= 4 × radius of Circle B

Diameter of Circle A = 2 × 4 × radius of Circle B

= 8 × radius of Circle B

The diameter of Circle A is 8 times greater than the radius of Circle B.

TEST 2

Q1 **C**

Time spent working on Project 3 per day = 25% of 8 hours = 2 hours

Time spent working on Project 3 in one week = 2 hours × 7 = 14 hours

Q2 **E**

$2\frac{1}{3}$ hours = 2 hours 20 minutes

2 hours 20 minutes after 3·40 p.m. is 6.00 p.m.

Q3 **C**

Speed = 600 km ÷ 15 hours = 40 kph

Q4 **D**

35 ÷ ❖ = 21·6 – 4·1

35 ÷ ❖ = 17·5

❖ = 35 ÷ 17·5 = 2

Q5 **D**

A pentagon has 5 sides.

Shape D has 6 sides.

Q6 **A**

Cost of 10 tiles = £3·50 ÷ 2 = £1·75

Cost of 70 tiles = £1·75 × 7 = £12·25

Q7 **B**

The 17:42 train from Derayston arrives at Baldington at 18:56

It is the only train that arrives at Baldington before 19:00

Q8 **D**

60 is larger than 40, so the answer will be greater than 100%.

40 = 100%, 20 = 50%, so 60 = 100 + 50 = 150%

OR

$\frac{60}{40} \times 100 = 1{\cdot}5 \times 100 = 150\%$

Q9 **D**

The question asks for the saving per ticket not the total saving.

Saving per ticket = 10% of £8·20 = £0·82

Q10 **D**

Angle A is between 90° (a right angle) and 180° (a straight line), so it is obtuse.

TEST 3

Q1 **A**

8272·6 ÷ 100 = 82·726

Q2 **B**

Number of apples sold = $\frac{1}{3}$ of 750 = 250

Number of apples remaining = 750 – 250 = 500

Number of apples thrown away = 500 ÷ 2 = 250

Number of apples left in cart = 500 – 250 = 250

Q3 **B**

Number of days in August = 31

Number of cups processed = 31 × 671 = 20 801

Test 3 answers continue on next page

Q4 **C**

The differences between the numbers in the sequence are:

+1, + 4, + 9, + 16...

These are the first four square numbers.

Next square number = 25

Next number in sequence = 45 + 25 = 70

Q5 **A**

10% of 231 kg = 23·1 kg

Weight this year = 231 kg + 23·1 kg = 254·1 kg

Q6 **E**

The spring temperature is higher than the winter temperature, so you must add.

Average spring temperature = –14°C + 9·5°C = –4·5°C

Q7 **C**

You can convert the fractions to decimals to make the comparison:

$\frac{1}{4} = 0{\cdot}25$, $\frac{1}{8} = 0{\cdot}125$, $\frac{3}{4} = 0{\cdot}75$, $\frac{5}{8} = 0{\cdot}525$, $\frac{3}{9} = 0{\cdot}333\ldots$, $\frac{8}{10} = 0{\cdot}8$

Starting from smallest: 0·125, 0·25, 0·333..., 0·525, 0·75, 0·8

Convert back to fractions: $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{9}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{8}{10}$

Q8 **B**

36 is the only option that is an even number, a square number and a multiple of 9

Q9 **A**

7·622 + 13·329 = 20·951

Q10 **C**

The scale increases by 0·2 each time, so the marks show 4·4, 4·6, 4·8, 5·0

4·7 is halfway between the marks showing 4·6 and 4·8

The arrow pointing to the halfway point is C.

Q11 **C**

When reflecting in the x-axis, the x-coordinate (first number) stays the same.

The y-coordinate (second number) changes from positive to negative or from negative to positive.

So the coordinates of Point C are (5, 8).

Q12 **D**

The number in the box must be 10 times smaller than 242 676

242 676 ÷ 10 = 24 267·6

Q13 **C**

421 ÷ 52 = 8 Remainder 5

Therefore, 9 buses will be needed in total to carry all the passengers.

Q14 **D**

$48 \times 7 + 4 = 223 + X$

$336 + 4 = 223 + X$

$340 = 223 + X$

$340 - 223 = X$

$117 = X$

Q15 **E**

64 cm³ = 4 cm × 4 cm × 4 cm

Side length of Cube A = 4 cm

Area of one face of Cube A = 4 cm × 4 cm = 16 cm²

Q16 **D**

Number of edges = 18

Number of faces = 8

Difference = 18 – 8 = 10

Q17 **D**

Length of Cuboid B = 7 cm × 2 = 14 cm

Width of Cuboid B = 3 cm × 2 = 6 cm

Height of Cuboid B = 4 cm × 3 = 12 cm

Volume of Cuboid B = 14 cm × 6 cm × 12 cm = 1008 cm³

Q18 **D**

247 ÷ 13 = 19

Q19 **B**

100 apples represent 5 parts.

1 part = 100 ÷ 5 = 20

Number of peaches = 7 × 20 = 140

Number of bananas = 3 × 20 = 60

Difference = 140 – 60 = 80

Q20 **B**

Mean weight = $\frac{\text{total weight of turnips}}{\text{number of turnips}}$

So, total weight of turnips = number of turnips × mean weight

Total weight of 5 turnips = 5 × 4·5 kg = 22·5 kg

Total weight of 6 turnips = 6 × 4·6 kg = 27·6 kg

Weight of added turnip = 27·6 kg – 22·5 kg = 5·1 kg

TEST 4

Q1 **D**

£3·60 = 360p

Number of coins = 360p ÷ 20p = 18

Q2 **A**

The question asks for the largest *percentage* increase.

The largest increase in population is between 2010 and 2011.

However, this only represents growth of roughly $\frac{1}{3}$ from 2010, so around 33%.

From 2005 to 2006, the population increases by roughly $3\frac{1}{2}$ times, so around 350%.

This is clearly the largest *percentage* increase between two years.

Q3 **B**

Length of 1 side = 40·2 cm ÷ 6 = 6·7 cm

Length of 2 sides = 6·7 cm × 2 = 13·4 cm

Q4 **D**

Smallest number (digits arranged from smallest to largest) = 23 889

Second smallest number = 23 898

Q5 **E**

Landing in London time: $11\frac{1}{2}$ hours after 2·30 p.m. → 2·00 a.m.

Landing in Hong Kong time: 8 hours after 2·00 a.m. → 10·00 a.m.

The options are given as 24-hour clock times.

10·00 a.m. is 10:00

Q6 **D**

The side length of the square is 6 units, so the coordinates of Point C are (2, –2).

Q7 A

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
4	0	0	0	1	9

Q8 E

$7\frac{3}{4} = 7\frac{6}{8}$

Number of eighths = (7 × 8) + 6 = 56 + 6 = 62

Q9 E

3600 ÷ 18 = 200

Q10 D

Sixteen of the small squares would fit into the large square.

One is shaded, so the fraction shaded is $\frac{1}{16}$

OR

$\frac{1}{4}$ of $\frac{1}{4}$ of the square is shaded, so fraction shaded = $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

Q11 E

Hundreds	Tens	Ones	•	Tenths	Hundredths	Thousandths
4	5	6	•	7	8	3

Q12 C

Total number of doughnuts eaten = (6 × 6) + (4 × 4) = 36 + 16 = 52

Total number of children = 6 + 4 = 10

Mean = $\frac{52}{10}$ = 5·2

5·2 rounded to the nearest whole number is 5

Q13 D

$\frac{15}{45} = \frac{1}{3}$

$\frac{1}{3} = \frac{20}{60}$, so Δ = 60

Q14 B

Total spent = (£110 ÷ 2) + £7·50 + £7·50 + £4·50
= £55 + £7·50 + £7·50 + £4·50 = £74·50

Money left = £110 – £74·50 = £35·50

Q15 B

Buses in April, July and August = 24 × 10 = 240

Q16 C

She cuts the ribbon in half, so she has 2 pieces.

Each of these halves is cut into 7 pieces

Number of pieces = 2 × 7 = 14

Q17 D

Angles in a triangle add up to 180°.

Size of third angle = 180° – 75° – 18° = 87°

Q18 A

The differences between the numbers in the sequence are:

–10, ?, ?, –7, –6

So, the pattern is:

–10, –9, –8, –7, –6

Missing number = 35 – 9 = 26

Q19 B

(48 – 7) × 3 = 41 × 3 = 123

Q20 C

The arrow points to 800 ml.

800 ml ÷ 1000 = 0·8 litres

TEST 5

Q1 D

486 ÷ 9 = 54

Q2 C

1·5 litres ÷ 0·5 litre = 3

OR

1·5 litres = 0·5 litre + 0·5 litre + 0·5 litre, so 1·5 litres is 3 times greater than 0·5 litre

Q3 E

Number of blue stamps = $\frac{1}{3}$ of 336 = 336 ÷ 3 = 112

Number of stamps that are not blue = 336 – 112 = 224

OR

Number of stamps that are not blue = $\frac{2}{3}$ of 336 = 224

Q4 D

Total cost = £25·50 × 4 = £102.00

Amount needed = £102.00 – £18.00 = £84.00

Q5 D

0·65 – 0·6 = 0·05

0·6 – 0·58 = 0.02

0·6 – 0·585 = 0·015

0·601 – 0·6 = 0·001

0·61001 – 0·6 = 0·01001

0·001 is the smallest difference, 0·601 is closest to 0·6

Q6 A

Compare the digits in the tenths column and then compare the digits in the hundredths column.

0·715 0·175 0·164 0·158

Q7 C

Cost of 1 lemon = £1·56 ÷ 3 = £0·52

Cost of 7 lemons = £0·52 × 7 = £3·64

Q8 E

120% of 35 = 1·2 × 35 = 42

OR

100% = 35

20% = $\frac{1}{5}$ of 35 = 35 ÷ 5 = 7

120% = 35 + 7 = 42

Q9 E

Length = 7·5 cm × 2 = 15 cm

Perimeter = 15 cm + 7·5 cm + 15 cm + 7·5 cm = 45 cm

Q10 D

There were more visitors from Brazil than from Sweden, so D is false.

Q11 D

$1\frac{3}{4}$ hours = 1 hour 45 minutes

1 hour and 45 minutes before 2·21 p.m. is 12·36 p.m.

Q12 D

$\frac{2}{3}$ of B = $\frac{2}{3}$ of 60 = 40

$\frac{4}{5}$ of A = 40

$\frac{1}{5}$ of A = 40 ÷ 4 = 10

A = 10 × 5 = 50

Q13 D

Arrow 4 points anticlockwise.

All the other arrows point clockwise.

So, rotating arrow 4 will not produce arrow 2

Q14 E

Radius = 15·5 cm ÷ 2 = 7·75 cm

Test 5 answers continue on next page

Q15 **B**

Total spent per month = £550 + £225 = £775

Total spent per year = £775 × 12 = £9300

Q16 **A**

Angles on a straight line add up to 180°.

So, the two angles at the foot of the triangle are:

180° – 138° = 42°

180° – 136° = 44°

Angles in a triangle add up to 180°.

So, Angle D = 180° – 42° – 44° = 94°

Q17 **A**

Total distance = 8 + 6 + 8 + 10 + 10 = 42 km

45 minutes = $\frac{3}{4}$ of an hour

Distance covered in $\frac{1}{4}$ of an hour = 42 km ÷ 3 = 14 km

Distance covered in 1 hour = 14 km × 4 = 56 km

The average speed is 56 kph.

Q18 **C**

Weight of rubbish = 420 kg – 102·5 kg = 317·5 kg

Q19 **E**

Total number of grapes picked

= 1348 + 2311 + 3213 + 2568 = 9440

Mean number of grapes picked per day

= 9440 ÷ 5 = 1888

Mean number of grapes picked per worker

= 1888 ÷ 4 = 472

Q20 **B**

The shape has 16 sides, each measuring 5 cm.

Perimeter = 16 × 5 cm = 80 cm

Q21 **B**

$2s + 4b = 81$

$(2 \times 0{\cdot}5) + 4b = 81$

$1 + 4b = 81$

$4b = 81 - 1$

$4b = 80$

$b = 80 \div 4$

$b = 20$

Q22 **B**

Volume = height × width × length

250 = 10 × 5 × length

250 = 50 × length

Length = 250 ÷ 50 = 5 cm

Q23 **E**

Work backwards using inverse operations:

10·5 + 17 = 27·5

27·5 – 8 = 19·5

19·5 × 2 = 39

Q24 **B**

Height = 5 cm × 3 = 15 cm

Area of triangle = $\frac{1}{2}$ × base × height

= $\frac{1}{2}$ × 5 cm × 15 cm = 37·5 cm²

Q25 **A**

Total cost = £4·65 + £4·65 + £0·55 = £9·85

Change received = £10·00 – £9·85 = £0·15

Q26 **D**

0·0282 + 2·7301 = 2·7583

Q27 **C**

The lines on two sides of the triangle show that they are equal length.

Therefore, the triangle is isosceles (two equal sides and two equal angles).

The angles in a triangle add up to 180°.

So, Angle H = (180° – 90°) ÷ 2 = 45°

Q28 **D**

The graph doesn't extend to £16, so look for a factor of 16

£8 = €5

So, £16 = €5 × 2 = €10

Q29 **A**

8·47 a.m. → 4·17 p.m. is 7 hours and 30 minutes or $7\frac{1}{2}$ hours

Q30 **B**

Difference = highest score – lowest score

= 98 – 14 = 84

TEST 6

Q1 **D**

45·6508

The fourth digit after the decimal point is greater than 5, so round up.

45·651 rounded to 3 d.p.

Q2 **D**

The expression must be in pence

£10·00 × 100 = 1000 p

Cost of 3 chocolate bars = 3 × y = $3y$

Change received = $1000 - 3y$

Q3 **D**

Perpendicular means 'at right-angles to'.

The line from (0, 0) to (5, –5) is at a right-angle to the line in the diagram.

Q4 **D**

1·65 = $\frac{165}{100} = \frac{33}{20}$

Q5 **B**

Width = $6b \div 3 = 2b$

Perimeter = $6b + 2b + 6b + 2b = 16b$

Q6 **B**

1 is both a square number and a cube number.

Q7 **D**

£85 = 85% of original price

Original price = $\left(\frac{£85}{85}\right) \times 100$ = £100

Q8 **D**

Cost of 3 lemons = 32 p × 3 = 96 p = cost of 2 oranges

Cost of 4 oranges = 96 p × 2 = 192 p = cost of 8 pears

Cost of 4 pears = 192 p ÷ 2 = 96 p

Q9 **B**

Number of tiles that fit along the length

= 6 m ÷ 0·5 m = 12

Number of tiles that fit along the width

= 2·5 m ÷ 0·5 m = 5

Total number of tiles to cover the floor = 12 × 5 = 60

Q10 **B**

$3y + 5 = (3 \times 4) + 5 = 17$

$4y + 6 = (4 \times 4) + 6 = 22$

$4y - 1 = (4 \times 4) - 1 = 15$

$$\text{Mean} = \frac{\text{sum of all values}}{\text{number of values}}$$

$$= \frac{17 + 22 + 15}{3} = \frac{54}{3} = 18$$

Q11 **A**

Total length = 25 m + 1 m + 1 m = 27 m

Total width = 10 m + 1 m + 1 m = 12 m

27 m × 12 m = 324 m²

Q12 **E**

The sum of all the angles in a square is

(90° + 90° + 90° + 90° =) 360°

Q13 **D**

10% increase = £10 000

So the initial amount = $\frac{£10\,000}{10}$ × 100 = £100 000

Number of shares = £100 000 ÷ £50 = 2000

Q14 **E**

The ratio of bananas to oranges is 7:4

132 oranges represent 4 parts

1 part = 132 ÷ 4 = 33

Number of bananas = 33 × 7 = 231

Q15 **C**

Amount received = £4·80 ÷ 3 = £1·60

Q16 **C**

Volume = width × length × height

It is a cube, so all side lengths are the same.

125 cm³ = 5 cm × 5 cm × 5 cm

Area of 1 face = width × length

= 5 cm × 5 cm = 25 cm²

A cube has 6 faces.

Total surface area = 25 cm² × 6 = 150 cm²

Q17 **C**

270° anticlockwise is a $\frac{3}{4}$ turn left, so he would face north-east.

Q18 **E**

Number of sides = 4 × 5 = 20

Perimeter = 7·5 cm × 20 = 150 cm

Q19 **A**

1·7 × 0·04 = 0·068

Q20 **D**

315 ÷ 9 = 35

315 ÷ 5 = 63

315 ÷ 4 = 78·75

315 is a multiple of 9 and 5, but not of 4

Q21 **B**

33 × 110 = 3630

3630 – 3200 = 430

Q22 **D**

The angles at a point (at the centre of a circle) add up to 360°.

25% = $\frac{1}{4}$

$\frac{1}{4}$ of 360° = 360° ÷ 4 = 90°

Q23 **D**

The angles in a triangle add up to 180°.

$X° + 5X° + 4X° = 180°$

$10X° = 180°$

$X° = 180° \div 10$

$X° = 18°$

$2X° = 18° \times 2 = 36°$

Q24 **E**

There are 12 other children in the queue.

There are twice as many in front of Maria as there are behind.

12 ÷ 3 = 4

So, there are (4 × 2 =) 8 in front and 4 behind her.

She is 9th.

Q25 **E**

4 out of 10 balls are striped

$\frac{4}{10} = \frac{2}{5}$

Q26 **A**

Temperature on Friday = –20° + 3° = –17°

Temperature on Saturday = –17° – 7° = –24°

Q27 **E**

Amount of water used = 450 ml × 4·5 = 2025 ml

2025 ml = 2·025 litres

Amount of water left = 3·500 litres – 2·025 litres

= 1·475 litres

Q28 **B**

–15 → 25 is 40

40 ÷ 2 = 20

–15 + 20 = 5

Q29 **C**

33 – 11 – 5 = 17

Q30 **C**

1 fortnight = 2 weeks

2 weeks out of 7 weeks = $\frac{2}{7}$

TEST 7

Q1 **D**

Number of eighths = 12 × 8 = 96

Q2 **D**

2450 rounded to the nearest 100 = 2500

2366 rounded to the nearest 50 = 2350

2458 rounded to the nearest 10 = 2460

2445 rounded to the nearest 10 = **2450**

2480 rounded to the nearest 10 = 2480

Q3 **B**

Sam's bar is the tallest for March.

Q4 **B**

Put the digits in order, from largest to smallest: 87 321

Q5 **D**

$5\frac{1}{2}$ hours earlier than 02:45 is 21:15

Q6 **A**

Angle A is acute (less than 90° / a right angle).

20° is the best estimate.

Q7 **E**

49 + (18 ÷ 6)

= 49 + 3 = 52

Q8 **D**

4·8 litres = 4800 ml

Number of bottles = 4800 ml ÷ 300 ml = 16

Q9 **E**

37·5% = $\frac{3}{8}$

$\frac{1}{8}$ of 80 = 80 ÷ 8 = 10

$\frac{3}{8}$ of 80 = 10 × 3 = 30

Test 7 answers continue on next page

Q10 **E**

The other moves are either rotations and/or enlargements

Q11 **E**

Shortest route = 250 m + 250 m + 250 m = 750 m

750 m ÷ 1000 = 0·75 km

Q12 **A**

Work backwards:

120 ÷ 2 = 60

75 – 60 = 15

Q13 **C**

Total weight of 3 boxes = 3 × 3·45 kg = 10·35 kg

Weight of 3rd box = 10·35 kg – 3·5 kg – 3·5 kg = 3·35 kg

Q14 **A**

Point B is on the y-axis, so its x-coordinate must be 0

Q15 **A**

45° or a $\frac{1}{8}$ turn clockwise from south-west is west.

Q16 **D**

80 kg of meat is 40 kg doubled.

8 tigers is 4 tigers doubled.

The number of tigers and the amount of meat are still in the same ratio, so the time doesn't change.

Q17 **C**

Length × width = area

$2w \times w = 128\,cm^2$

Substitute the options into this formula:

$(2 \times 16) \times 16 = 512\,cm^2$

$(2 \times 4) \times 4 = 32\,cm^2$

$(2 \times 8) \times 8 = \mathbf{128\,cm^2}$

$(2 \times 22) \times 22 = 968\,cm^2$

$(2 \times 28) \times 28 = 1568\,cm^2$

So, width (w) = 8 cm

OR

$2w \times w = 128$

$2w^2 = 128$

$w^2 = 64$

$w = 8$

Q18 **B**

0·034 + 45·9 = 45·934

Q19 **D**

Cost of 4 oranges = (44 p × 3) + 22 p = 154 p

Cost of 12 oranges = 154 p × 3 = 462 p

Cost of 15 oranges = 462 p + (44 p × 3) = 594 p

594 p = £5·94

Q20 **C**

99 + 98 + 97 = 294

Q21 **B**

Number of bags = £37·50 ÷ £2·50 = 15

Total weight = 15 × 750 g = 11 250 g

11 250 g = 11·25 kg

Q22 **C**

$2{\cdot}3 = \frac{23}{10} = \frac{46}{20}$

Q23 **C**

6 small squares + 1 larger square (made of 4 small squares) = 7 squares

Q24 **C**

A prime number can only be divided by itself and 1

The prime numbers under 20 are: 2, 3, 5, 7, 11, 13, 17 and 19

1 is not a prime number.

Q25 **A**

Option 1 = $\frac{120}{360} = \frac{1}{3}$

Option 2 = $\frac{1}{3}$

Therefore, Option 3 + Option 4 = $\frac{1}{3}$

If $\frac{1}{3}$ represents 80 students, total number of students asked = 80 × 3 = 240

Q26 **B**

Y must be neither an even number nor a multiple of 7

59 is the only option that meets these criteria.

Q27 **C**

7 months have 31 days: January, March, May, July, August, October and December

Q28 **C**

Largest 2-digit even number = 98

$7X + 2Y - 12 = (7 \times 7) + (2 \times 98) - 12$

$= 49 + 196 - 12$

$= 233$

$3X + 8Y + 32 = (3 \times 7) + (8 \times 98) + 32$

$= 21 + 784 + 32$

$= 837$

Difference = 837 – 233 = 604

Q29 **C**

The sum of the angles in a triangle is always 180°.

Q30 **B**

Area of triangle = $\frac{1}{2}$ × base × height

$= \frac{1}{2} \times 7\,cm \times 10\,cm = 35\,cm^2$

Area of shape = 35 cm² × 8 = 280 cm²

Q31 **B**

75 minutes = $1\frac{1}{4}$ hours = $\frac{5}{4}$ hours

Distance driven in $\frac{1}{4}$ hour = 65 km ÷ 5 = 13 km

Speed in kilometres per hour = 13 km × 4 = 52 kph

Q32 **D**

Side length of square = 2 × radius of circle = diameter of circle = 39 cm

Perimeter = 39 cm × 4 = 156 cm

156 cm = 1·56 m

Q33 **E**

£30 × 100 = 3000 p

$\frac{30}{3000} \times 100 = 0{\cdot}01 \times 100 = 1\%$

Q34 **C**

The angles in a quadrilateral add up to 360°.

All the shapes are quadrilaterals.

A square, parallelogram and rectangle all have 2 pairs of parallel lines.

A kite has 0 pairs of parallel lines.

A trapezium is the only shape given with 1 pair of parallel lines.

Q35 **D**

$\frac{2}{5}$ of 75 = 30

Half of 62 = 31

$\frac{1}{8}$ of 248 = 31

30% of 90 = 27

9 × 4 = 36

30% of 90 is the smallest.

Q36 D

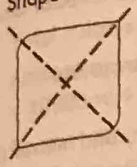
$67{\cdot}5 \div 0{\cdot}1 = 675$

Q37 B

The lowest rainfall is in August and the second lowest rainfall is in May.

Q38 E

Shape E has two lines of symmetry.



Q39 E

$\frac{1}{5}$ of fish are blue and $\frac{4}{5}$ of fish are not blue.

$\frac{4}{5} = 80$

$\frac{1}{5} = 80 \div 4 = 20$ = number of blue fish

Difference = $80 - 20 = 60$

Q40 A

Height = $X \times 3 = 3X$

Area of triangle = $\frac{1}{2} \times$ base $\times$ height

$= (\frac{1}{2} \times X \times 3X)$ cm^2

$= (\frac{X}{2} \times 3X)$ cm^2

Q41 C

$4590 \div 5 = 918$

Q42 C

Number of tables that seat 5 = 20% of 25 = 5

Number of tables that seat 7 = $25 - 5 = 20$

Maximum number of people = $(5 \times 5) + (7 \times 20)$

$= 25 + 140 = 165$ people

Q43 E

Weight of 1 box = $\frac{1}{5}$ of 1000 kg = 200 kg

Weight of 7 boxes = 200 kg $\times$ 7 = 1400 kg

Weight of lorry without 7 boxes = 4582 kg – 1400 kg

= 3182 kg

Q44 E

If Y is even, $2Y$ must also be even.

Even number – odd number = odd number

So $2Y - 5$ must be odd.

Q45 E

Size of angle between 2 adjacent numbers =

$360° \div 12 = 30°$

Size of angle between 6 and 11 = $5 \times 30° = 150°$

The hour hand is halfway between 11 and 12, so

$30° \div 2 = 15°$

Angle = $150° + 15° = 165°$

Q46 E

Difference = largest – smallest

$= 2x + 9 - x$

$= x + 9$

Q47 D

Fraction not shaded = $\frac{8}{12} = \frac{2}{3}$

Q48 A

Angles in a triangle add up to 180°.

$b° = 180° - 2x - x$

$= 180° - 62° - 31° = 87°$

Q49 D

Total marks for first 4 tests = $79 \times 4 = 316$

Total marks for 5 tests = $316 + 84 = 400$

Mean = $400 \div 5 = 80$

Q50 C

$97 + 89 + 83 = 269$

TEST 8

Q1 C

Thousands	Hundreds	Tens	Ones
7	0	0	7

seven thousand and seven

Q2 A

Rearrange the digits from largest to smallest: 977 532

Q3 D

Total value of two-pence coins = 80×2p = 160p

Number of 10-pence coins = $160\text{p} \div 10\text{p} = 16$

Q4 A

Area of triangle = $\frac{1}{2} \times$ base $\times$ height

$= \frac{1}{2} \times 10\text{ cm} \times 7\text{ cm} = 35\text{ cm}^2$

Number of triangles in new shape = $210\text{ cm}^2 \div 35\text{ cm}^2 = 6$

Q5 B

The 07:23 train arrives in Hinkley at 07:58

07:23 → 07:58 is 35 minutes

Q6 E

The coordinates of the fourth corner will be 2 across and 2 down from (8, 10), so they are (10, 8).

Q7 C

Factors of 36: 1, 36, 2, 18, 3, 12, 4, 9, 6

Factors of 15: 1, 15, 3, 5

Difference = $9 - 4 = 5$

Q8 D

When Jenny multiplies her decimal number by 4, she gets a whole number.

Therefore, the decimal fraction part of the number must be 0·25, i.e. $\frac{1}{4}$

3·25 is the only option that meets this criterion.

$3{\cdot}25 \times 4 = 13$

Q9 C

Number of hours worked per day = 8·5

Number of hours worked per week = $8{\cdot}5 \times 5 = 42{\cdot}5$

From the pictogram, amount earned per hour = £55

Amount earned per week = $42{\cdot}5 \times$ £55 = £2337·50

Q10 B

30°C = 125% of the previous year's temperature

25% of the previous year's temperature = $30°\text{C} \div 5 = 6°\text{C}$

Previous year's temperature (100%) = $6°\text{C} \times 4 = 24°\text{C}$

Q11 C

$\frac{2}{10} = \frac{1}{5}$, $\frac{5}{20} = \frac{1}{4}$, $\frac{4}{24} = \frac{1}{6}$

The fractions are now all unit fractions (have a numerator of 1), so the smallest fraction is the one with the largest denominator (as the whole is divided into the most parts).

The smallest fraction given is $\frac{1}{9}$

Q12 C

After a quarter turn clockwise, he faces east.

After 135° turn ($\frac{3}{8}$ of a turn) anticlockwise, he faces north-west.

Test 8 answers continue on next page

Q13 **B**

Use an example, e.g.

Let the radius of Circle A = 30

Radius of Circle B = 30 ÷ 3 = 10

Diameter of Circle B = 10 × 2 = 20

Radius of Circle A ÷ diameter of Circle B

$= 30 \div 20 = 1\frac{1}{2}$

So, the radius of Circle A is $1\frac{1}{2}$ times greater than the diameter of Circle B.

Q14 **A**

Area = 8·5 cm × 2·8 cm = 23·8 cm²

Q15 **D**

Number of pigs = 3 × 12 = 36

Amount eaten per day = $(36 \times D) + (36 \times S)$

$= 36D + 36S$

Amount eaten per week = $(7 \times 36D) + (7 \times 36S)$

$= 252D + 252S$

Q16 **E**

38 + 18 + (14 × 2) = 38 + 18 + 28 = 84

(13 × 7) + 2 + 19 = 91 + 2 + 19 = 112

43 – 8 + 32 + 80 = 147

(12 × 10) – 5 + 90 = 120 – 5 + 90 = 205

32 – 8 – (6 × 5) = 32 – 8 – 30 = **–6**

Q17 **D**

Volume of Cube A = 2 cm × 2 cm × 2 cm = 8 cm³

Volume of Cube B = 4 cm × 4 cm × 4 cm = 64 cm³

Percentage increase = $\left(\frac{64}{8}\right) \times 100 = 8 \times 100 = 800\%$

Q18 **A**

There are 12 divisions from 17 to 23, so each represents 0·5

The arrow is 5 divisions from 17, so it is pointing to 17 + 2·5 = 19·5

Q19 **E**

Number of males that took part = 70% of 400

= 0·7 × 400 = 280

Number of males older than 25 = 40% of 280

= 0·4 × 280 = 112

Q20 **D**

If the largest value is 18, there must be 4 even numbers before it, so:

10, 12, 14, 16, 18

Sum = 10 + 12 + 14 + 16 + 18 = 70

Q21 **E**

A reflex angle is greater than 180° but less than 360°.

Q22 **C**

Total cost = (£4·40 × 2) + (£2·30 × 4)

= £8·80 + £9·20 = £18·00

Q23 **C**

Total number of blocks = 4 + 8 + 7 = 19

Number of non-green blocks = 4 + 7 = 11

Probability = $\frac{11}{19}$

Q24 **D**

3 out of 9 triangles are shaded = $\frac{3}{9} = \frac{1}{3}$

Q25 **C**

78 tigers represents 3 parts of the ratio.

1 part = 78 ÷ 3 = 26

Number of leopards (8 parts of ratio) = 26 × 8 = 208

Q26 **E**

Side length of Cube A = 2 cm × 3 = 6 cm

Volume of Cube A = 6 cm × 6 cm × 6 cm = 216 cm³

Q27 **D**

Multiples of 6 greater than 7 and less than 48:

12, 18, 24, 30, 36, 42

So, there are 6 numbers that appear in both sets.

Q28 **D**

Kilometres (km) are the most appropriate measurement for long distances.

Millimetres (mm), centimetres (cm) and metres (m) are too small.

Kilograms (kg) are a unit of mass.

Q29 **C**

Angles in a triangle add up to 180°.

$(B° - 62°) + (B° - 13°) + B° = 180°$

$3B° = 180° + 62° + 13°$

$3B° = 255°$

$B° = 255° \div 3$

$B° = 85°$

Q30 **E**

Total number of hours = 7 people × 21 hours

= 147 hours

Hours for 21 people = 147 ÷ 21 = 7 hours

Q31 **C**

6·7 km ÷ 8

= 6700 m ÷ 8 = 837·5 m

Q32 **C**

Shape C holds the same form twice whilst being rotated through 360°.

Shape A holds the same form four times whilst being rotated through 360°, Shape B three times, Shape E five times and Shape D only once.

Q33 **D**

Perpendicular means 'at right-angles (90°) to'.

Q34 **D**

Total number of robots = 9 × 54 × 19 = 9234

9234 rounded to the nearest 10 is 9230

Q35 **D**

D is false. There are more blue sweets (13) than yellow sweets (10) in the jar.

Q36 **C**

0·305 – 0·3 = 0·005

0·31 – 0·3 = 0·01

0·3 – 0·298 = 0·002

0·3 – 0·2 = 0·1

0·3 – 0·2002 = 0·0998

0·002 is the smallest difference, so 0·298 must be closest to 0·3

Q37 **D**

Number of cupcakes eaten = $2\frac{3}{4} \times 20 = 2{\cdot}75 \times 20$

= 55 cakes

Q38 **D**

1 year = 12 months

Percentage = $\frac{54}{12} \times 100 = 4{\cdot}5 \times 100 = 450\%$

Q39 **B**

Odd number × 2 = even number

So, $2b$ must be an even number.

Q40 C

Total distance covered = (100 km × 4) + (70 km × 3)
= 610 km

Total number of hours = 4 + 1 + 3 = 8

Average speed = 610 km ÷ 8 = 76.25 kph

Q41 B

Amount of water = 2 litres × 4 = 8 litres

Total volume of mixture = 2 litres + 8 litres = 10 litres

Amount of cups = 10 litres ÷ 200 ml
= 10000 ml ÷ 200 ml = 50

Q42 B

Quadrilaterals have internal angles that add up to 360°.

A rhombus is the only option that is a quadrilateral.

Q43 C

$$\text{Mean} = \frac{\text{sum of all values}}{\text{number of values}}$$

Therefore:

$8 + 9 + A + B = 10 \times 4$

$17 + A + B = 40$

$A + B = 40 - 17$

$A + B = 23$

Q44 E

The differences between the numbers in the sequence are:

+3, +4, +5, +6 …

Next number in sequence = 36 + 7 = 43

Q45 B

Side length of square = –5 → 3 = 8 cm

Area = 8 cm × 8 cm = 64 cm^2

Q46 B

The most common score, will represent the biggest slice on the pie chart.

Therefore, 2 is the most common score

Q47 C

7 + 6 = 13, so the total number of oranges and bananas must be a multiple of 13

64 is not a multiple of 13, i.e. 64 ÷ 13 = 4·923…

Q48 E

Possible combinations of coins (11 in total):

1 1 1 1 1 1 1 1 1 1 1

1 1 1 1 1 1 1 1 2

1 1 1 1 1 1 2 2

1 1 1 1 2 2 2

1 1 2 2 2 2

2 2 2 2 2

5 5

5 1 1 1 1 1

5 1 1 1 2

5 1 2 2

10

Q49 D

The cyclist covers no distance from B to C, so they must be stationary.

B to C is 20 minutes.

Q50 C

Perimeter = $x + 13 + 3x + 2 + x + 5 + 2 + 8 + 3x$

$= 8x + 30$