Stage 4 Mathematics

- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value
- recognise and show, using diagrams, families of common equivalent fractions
- recognise and write decimal equivalents of any number of tenths or hundredths
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as objects are connected to m objects
- add and subtract fractions with the same denominator
- read, write and convert time between analogue and digital 12- and 24-hour clocks
- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

- round any number to the nearest 10, 100 or 1000
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- estimate, compare and calculate different measures, including money in pounds and pence
- plot specified points and draw sides to complete a given polygon

- identify, represent and estimate numbers using different representations
- recognise and use factor pairs and commutativity in mental calculations
- find the area of rectilinear shapes by counting squares
- describe movements between positions as translations of a given unit to the left/right and up/down

- order and compare numbers beyond 1000
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- describe positions on a 2-D grid as coordinates in the first quadrant

- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- recall multiplication and division facts for multiplication tables up to 12 × 12
- Convert between different units of measure [for example, kilometre to metre; hour to minute]
- complete a simple symmetric figure with respect to a specific line of symmetry

- count backwards through zero to include negative numbers
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
- solve simple measure and money problems involving fractions and decimals to two decimal places.
- identify lines of symmetry in 2-D shapes presented in different orientations

- find 1000 more or less than a given number
- estimate and use inverse operations to check answers to a calculation
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- compare numbers with the same number of decimal places up to two decimal places
- identify acute and obtuse angles and compare and order angles up to two right angles by size

- count in multiples of 6, 7, 9, 25 and 1000
- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten
- recognise and write decimal equivalent to ¼, ½, ¾
- round decimals with one decimal place to the nearest whole number
- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

1   Find the next two numbers:

   a)   7, 14, 21, 28, ……………………. , ……………………….

   b)   9, 18, 27, 36, ……………………. , ……………………….

   c)   25, 50, 75, ……………………. , ……………………….

   d)   7000, 8000, 9000, ……………………. , ……………………….

(NPV1, 4 marks)

2 a)   What is 1000 more than 7168?

………………………

   b)   What is 1000 less than 2356?
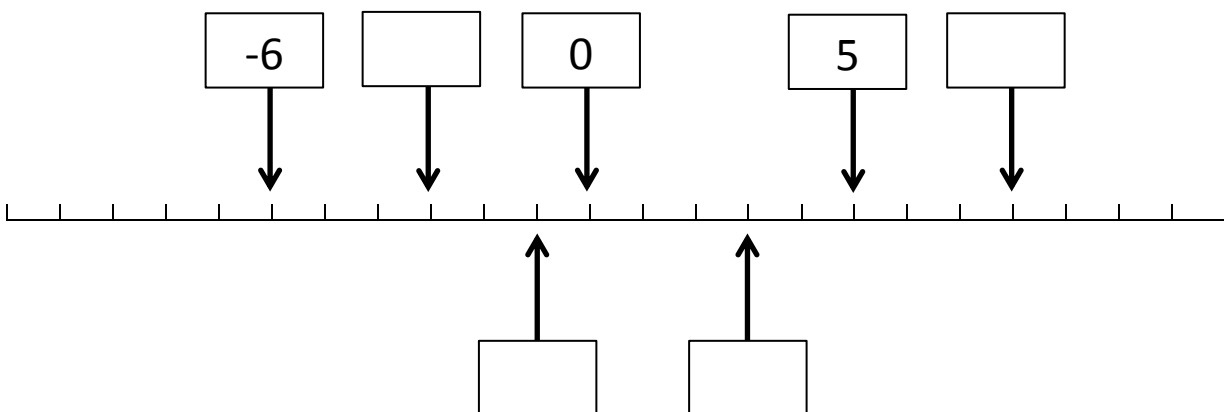
………………………

   c)   Find the value of Δ:

$$4136 + Δ = 10\ 136$$

………………………
(NPV2, 3 marks)

3   Write in the numbers missing from the empty boxes:

(NPV3, 4 marks)

4 a)   Write these numbers using numerals:

i)   Four thousand, two hundred and sixty:

....

ii)   Four thousand, two hundred and six:

....

iii)   Four thousand, two hundred and sixteen:

....

b)   Write these numbers in words:

i)   3817: ....

....

ii)   3870: ....

....

iii)   3807: ....

....

(NPV4, 6 marks)

5   Write these numbers in order, from smallest to largest:

<p style="text-align:center">12340   1432   4320   3421   3420   1243</p>

(NPV5, 3 marks)

6 a)   Find the value of Δ in each of these statements:

i)   Δ = 5000 + 300 + 20

Δ = …………………

ii)   5000 + Δ + 2 = 5302

Δ = …………………

iii)   Δ + 30 + 2 = 5032

Δ = …………………

b)   Complete the calculations:

i)   7070 – 1000 = 6070   **ii)**   6666 – 999 = ……………………

7070 – 999 = ……………………   6666 – 1000 = ……………………

7070 – 1001 = ……………………   6666 – 1001 = ……………………

(NPV6, 8 marks)

7 a)   Round to the nearest 10:

i)   36:   …………………….   **iii)**   162:   …………………….

ii)   75:   …………………….   **iv)**   298:   …………………….

b)   Round to the nearest 100:

i)   136:   …………………….   **iii)**   382:   …………………….

ii)   265:   …………………….   **iv)**   978:   …………………….

c)   Round to the nearest 1000:

i)   1360:   …………………….   **iii)**   3825:   …………………….

ii)   2500:   …………………….   **iv)**   9970:   …………………….

(NPV7, 12 marks)

8   Hannah thinks of a whole number.

When rounded to the nearest 10, the number is **220**.

  a)   What is the largest possible value of Hannah's number?

…………………

  b)   What is the smallest possible value of Hannah's number?

…………………

(NPV8, 2 marks)

9 a)   Match the Arabic numeral with the correct Roman numeral, where possible:

15		LV
55		XCIII
39		
		XV
88		C
93		XXXIX

  b)   Find the missing Arabic and Roman numerals

(NPV9, 5 marks)

10   Calculate

a) 2167 + 374

c) 1714 – 48

…………………….

…………………….

b) 3479 + 2667

d) 5334 – 2785

…………………….

…………………….

(AS1, 8 marks)

11 a)   Jacob estimates the answer to 2879 + 509 as shown:

$$2879 + 509 \approx 3400$$

Do you agree with Jacob?

Explain your answer

………

………

………

b) George says 4126 – 2363 = 2243 because:

$$'4000 - 2000 = 2000$$
$$300 - 100 = 200$$
$$60 - 20 = 40$$
$$6 - 3 = 3$$
$$so\ 4126 - 2363 = 2243'$$

Do you agree with George?

Use an addition calculation to justify your answer

………

………

………

(AS2, 4 marks)

12 a) Vicki is trying to solve the problem:

> *There are 2479 pupils in a school. 432 of the pupils are girls.*
>
> *How many pupils are boys?*

i) Vicki draws a diagram to help.

Place a (✓) by the correct diagram.

432	
Boys	2479

Boys	
432	2479

2479	
432	Boys

ii) Solve the problem

…………………… people

b) Find the missing digits in this calculation

$$
\begin{array}{r}
3\ \square\ 6\ 2 \\
+\quad 7\ 5\ \square \\
\hline
4\ 2\ \square\ 1 \\
\hline
\end{array}
$$

(AS3, 5 marks)

13 a) Complete the number sentences:

i) $8 \times 7 =$ ....

v) .... $\div 7 = 12$

ii) .... $\times 6 = 42$

vi) $132 \div$ .... $= 12$

iii) $8 \times$ .... $= 72$

vii) $12 \times 3 =$ .... $\times 6$

iv) $54 \div 6 =$ ....

viii) .... $\times 12 = 8 \times 6$

b) Find three possible values for Δ and $?$

$$\Delta \times ? = 36$$

$\Delta =$ .... and $? =$ ....

$\Delta =$ .... and $? =$ ....

$\Delta =$ .... and $? =$ ....

(MD1, 11 marks)

14 Calculate:

a) $4 \times 3 \times 12$

....

b) 200×6

....

c) $2400 \div 8$

....

d)   240 ÷ 10

....

e)   12 × 11 × 0

....
(MD2, 9 marks)

15   Write one number in each gap to make the statements true:

a)   12 × 8 = 8 × ....

b)   2 × 3 × 4 = ... × 4

c)   2 × 6 × 5 = ... × 6

d)   17 × 5 = (10 + 7) × ....

= (10 × ....) + (7 × ....)

= 50 + 35

= ....

(MD3, 7 marks)

16   Calculate

a) 27 × 4   **c)** 243 × 8

....

b) 46×7

d) 452×6

…………………

……………………
(MD4, 8 marks)

17 a) Mark buys six packets of crisps.

One packet of crisps costs 24p.

How much does Mark spend?

i) Write a mathematical statement, involving multiplication or division, to represent the problem:

…………………………

ii) Solve the problem.

…………………………

b) An ice cream sundae is made of one scoop of ice cream, one topping and one sauce.

How many different ice creams sundaes can be created from 5 different flavours of ice-cream, 3 different toppings and 4 different sauces?

…………………………
(MD5, 6 marks)

18   Complete the statements:

a)   **b)**   **c)**
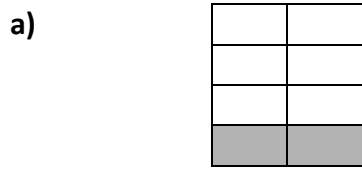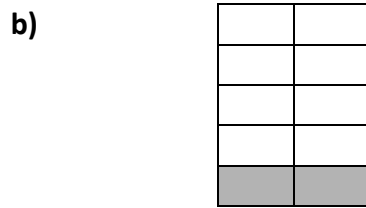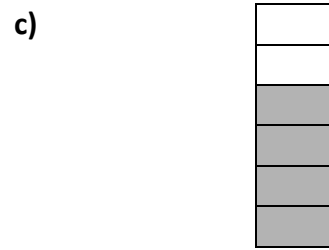
$$\frac{}{8} = \frac{1}{4}$$ $$\frac{2}{} = \frac{}{5}$$ $$\frac{}{3} = \frac{4}{}$$

(F1, 5 marks)

19   Look at this number line.

What numbers are the arrows pointing at? Fill in the empty boxes.

| | 6.5 | | | 6.6 | |

(F2, 3 marks)

20   Complete the following statements:

a) $\frac{1}{4}$ of 36 = ...   **d)** $\frac{2}{5}$ of 20 = ...

b) $\frac{1}{3}$ of 36 = ...   **e)** $\frac{2}{3}$ of 60 = ...

c) $\frac{1}{5}$ of 150 = ...   **f)** $\frac{3}{10}$ of 80 = ...

(F3, 6 marks)

21   Calculate:

a) $\dfrac{1}{3} + \dfrac{2}{3} =$

c) $\dfrac{2}{5} + \dfrac{2}{5} =$

b) $\dfrac{5}{7} - \dfrac{2}{7} =$

d) $\dfrac{1}{8} + \dfrac{5}{8} - \dfrac{3}{8} =$

(F4, 6 marks)

22 a)   Match the fraction with the decimal equivalent, where possible:

$\dfrac{9}{100}$	$\dfrac{9}{10}$	$\dfrac{91}{100}$		$\dfrac{19}{100}$	$\dfrac{11}{100}$

0.01	0.91	0.09		0.9	0.19

b)   Find the missing fraction and decimal. Write them in the boxes.

(F5, 5 marks)

23   Complete the table using the correct decimal equivalent:

Fraction	Decimal
$\dfrac{1}{2}$	
$\dfrac{1}{4}$	
$\dfrac{3}{4}$	

(F6, 3 marks)

24 Find the value of Δ in each of these statements:

a) 23 × 10 = Δ

$\qquad$ Δ = ...

b) Δ × 100 = 1600

$\qquad$ Δ = ...

c) Δ × 10 = 110

$\qquad$ Δ = ...

d) Δ ÷ 10 = 470

$\qquad$ Δ = ...

e) 2300 ÷ Δ = 23

$\qquad$ Δ = ...

f) 4100 ÷ Δ = 41

$\qquad$ Δ = ...

(F7, 6 marks)

25 Round:

a) 8.3 to the nearest whole number: ....

b) 16.7 to the nearest whole number: ....

c) 99.2 to the nearest whole number: ....

d) 149.5 to the nearest whole number: ....

(F8, 4 marks)

26 Place these numbers in order, from smallest to largest:

1.32 $\qquad$ 1.2 $\qquad$ 1.23

1.3 $\qquad$ 3.12 $\qquad$ 2.13

3.2

(F9, 3 marks)

27 a)   A bag of doughnuts cost £1.25.

Liz and John want to buy 4 bags.

If Liz pays £2.15, how much must John pay?

....

b)   Max is 1.62m tall.

He is 47cm taller than his sister.

How tall is his sister?

....

(F10, 5 marks)

28   Are these statements true (T) or false (F)?

   a)   1000 m = 1 km   ………   **c)**   1000 kg = 1 g   ………

   b)   100 m = 1 km   ………   **d)**   100 minutes = 1 hour   ………

                                                                        (M1, 4 marks)

29 a)   The perimeter of a rectangle is 30 centimetres.

        Find two possible sets of dimensions for the rectangle.

                              Set 1:   Length = ……………. cm,   Width = ……………. cm

                              Set 2:   Length = ……………. cm,   Width = ……………. cm

   b)   Calculate the perimeter of this shape.

60 cm

1.2 m
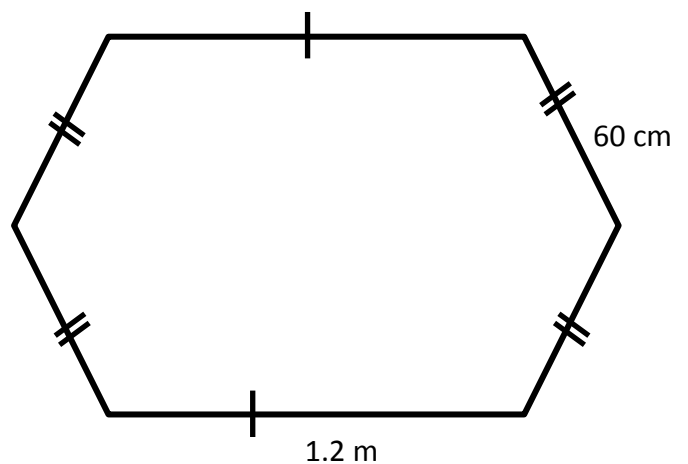
                              ……………………………………………
                                                                        (M2, 4 marks)

30   Each shape is made of 1 cm by 1 cm squares.

       Find the area of each shape:

a)
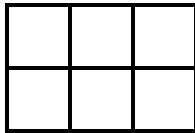
………………… cm^2

c)
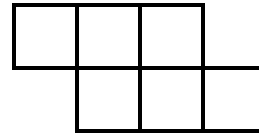
………………… cm^2

b)
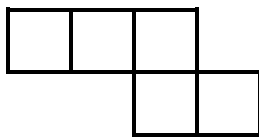
………………… cm^2

d)
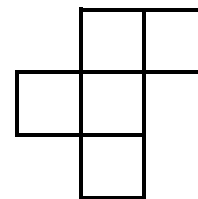
………………… cm^2

(M3, 4 marks)

31   A can of soup holds 500 ml and costs 70p.

       How much does 2 litres of soup cost?

………………………………………………

(M4, 2 marks)

32 a) Match the correct 12-hour and 24-hour times where possible:

10:30 p.m.	14:30
6:30 p.m.	06:30
2:30 p.m.	
	20:30
8:30 p.m.	08:30
8:30 a.m.	18:30

b) Find the missing 12-hour and 24 hour times. Write them in the empty boxes.

(M5, 5 marks)

33 Lydia goes on holiday on Monday 6th April at 10:15 a.m.

She returns home on Wednesday 15th April at 6:30 p.m.

Calculate the duration of her holiday.

………….. days ………….. hours …………. minutes

(M6, 3 marks)

34 a)   What is the same about an isosceles triangle, an equilateral triangle and a scalene triangle?

b)   What is different about an isosceles triangle and a scalene triangle?

c)   What is the same about a parallelogram, a rhombus and a trapezium?

d)   What is different about a parallelogram and a trapezium?

(GPS1, 4 marks)

35   Label:

    a)   Four acute angles with the letter A

    b)   Four obtuse angles with the letter O

    c)   A right angle with the letter R
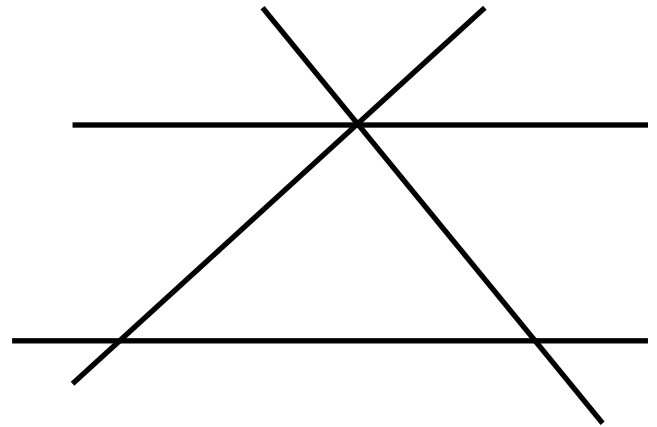
(GPS2, 4 marks)

36   Here are six shapes
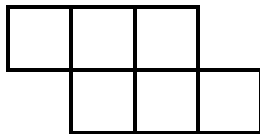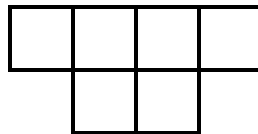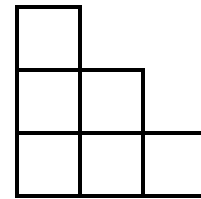
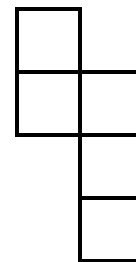**A**   **B**   **C**
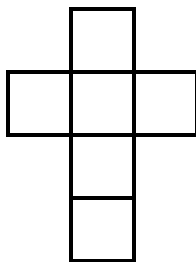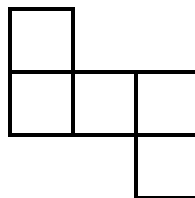
D   **E**   **F**

Write the letters of the shapes that have a line of symmetry

....

(GPS3, 3 marks)

37   Shade three squares so that this design is symmetrical in the line of symmetry.

Line of symmetry
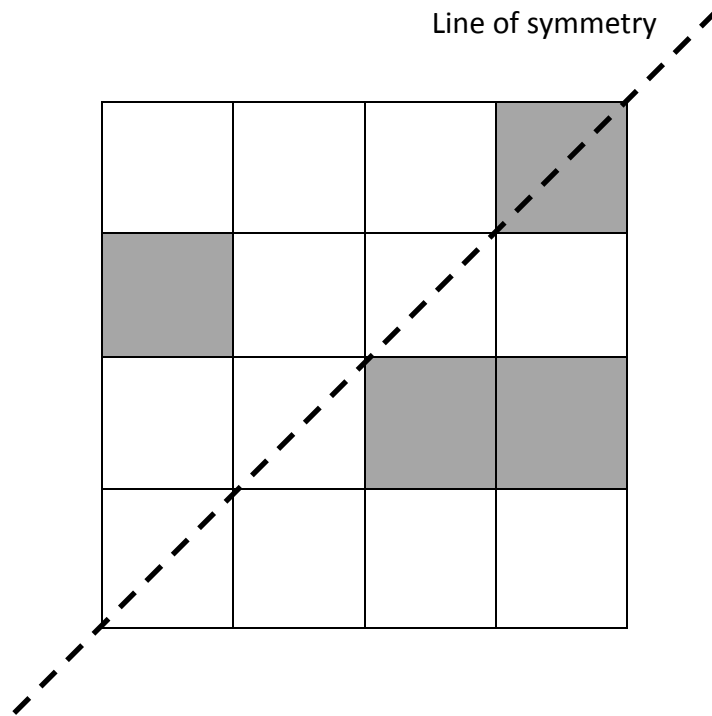
(GPS4, 2 marks)

38   Find the co-ordinates of all the points.

A(........ , ...)   C(........ , ...)

B(........ , ...)   D(........ , ...)
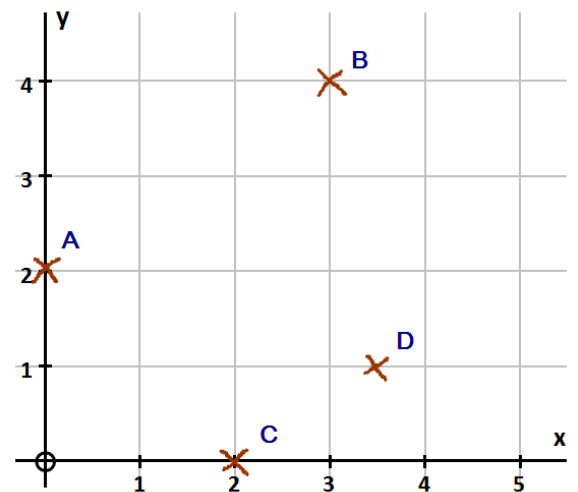
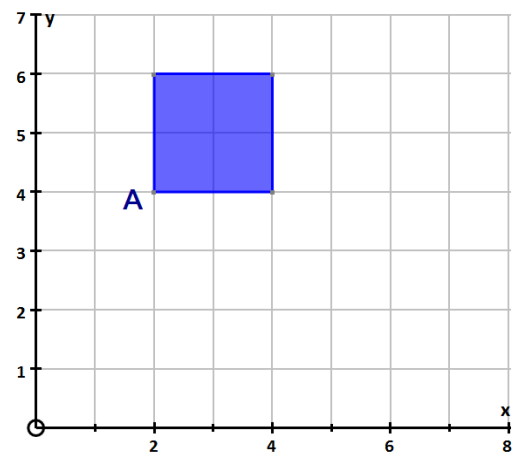*(GPD1, 4 marks)*

39   This square is translated 2 squares to the right and 3 squares down.

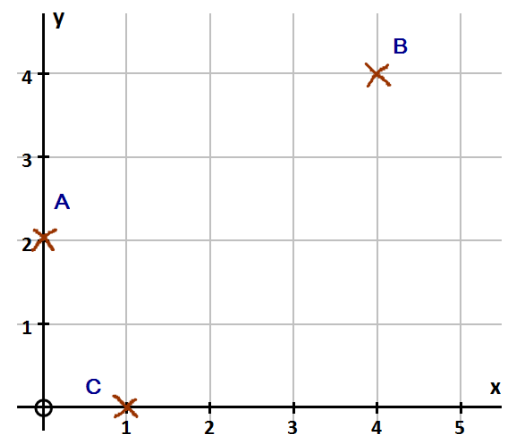Write the new co-ordinates of vertex A.

.

....

(GPD2, 2 marks)

40   A, B and C are three vertices of a rectangle.

What are the co-ordinates of the fourth vertex?

.

....
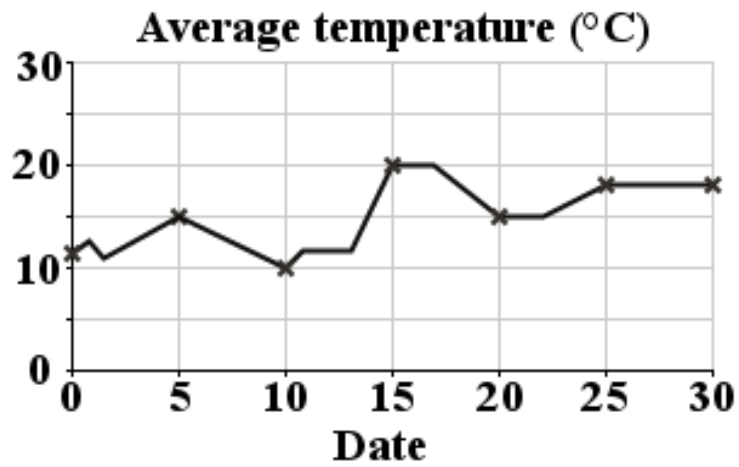

(GPD3, 2 marks)

41 The line graph shows information about the temperature during April.

Average temperature (°C)

Are the statements true (T) or false (F)?

a) It was warmer at the start of the April than at the end

....

b) The warmest day was the 20th April

....

c) The coldest day was the 10th April

....

d) The warmest temperature was 30°C

....

(S1, 4 marks)

42   The bar chart shows the number of pints of milk drank by Class 4C during the week.
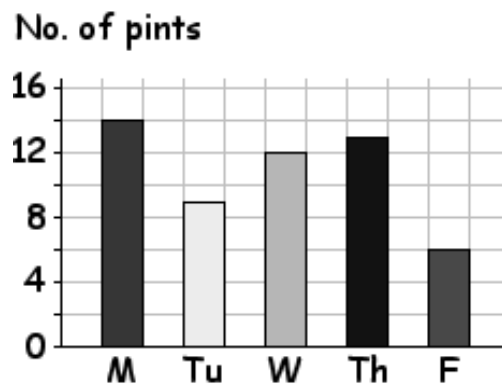
No. of pints

     a)   How many pints did the class drink in total during the week?

....

     b)   How many more pints did the class drink on Monday than on Friday?

....

     c)   What is the difference between the number of pints the class drank on Tuesday and Thursday?

....

     d)   What is the sum of the number of pints the class drank on Wednesday, Thursday and Friday?

....

(S2, 4 marks)

Number and Place Value	+ and -	× and ÷	Fractions, Decimals & %s	Measure-ment	Properties of Shapes	Position & Direction	Statistics
NUMBER					GEOMETRY		

NOT GOT IT YET?

Key topics I need to work

Stage 4
Mathematics

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