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Evidence for Excellence in Education

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AUTUMN 2

Year 5

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Answers to the practice questions

Arithmetic booklet

Practice Questions

a What is **half** of **50**?

25

1 mark

b 4550 + 2149 =

6699

1 mark

STOP **Please wait until you are told to start work on page 4.**

You should work through the booklet until you are asked to stop. Answer as many questions as you can. If you find a question is too difficult, go on to the next one and come back to it later if you have time.

Mark scheme for Arithmetic booklet

1

PoS N *Round any number to the nearest 10, 100 or 1000*

1m

Award **1 mark** for:

- 8000

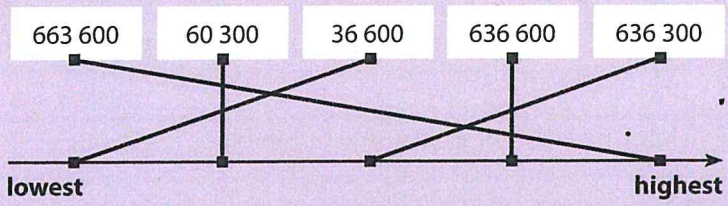
2

PoS N *Read, write, order and compare numbers to at least 1 000 000*

1m

Award **1 mark** for:

- **all five** numbers ordered as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Accept:

- any other clear way of indicating the correct order, such as writing the numbers in order on the arrow

Do not accept:

- two or more lines drawn from the same number

3

PoS C *Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)*

1m

Award **1 mark** for:

- 109 222

4

PoS C *Recall multiplication and division facts for multiplication tables up to 12 × 12*

1m

Award **1 mark** for:

- 8

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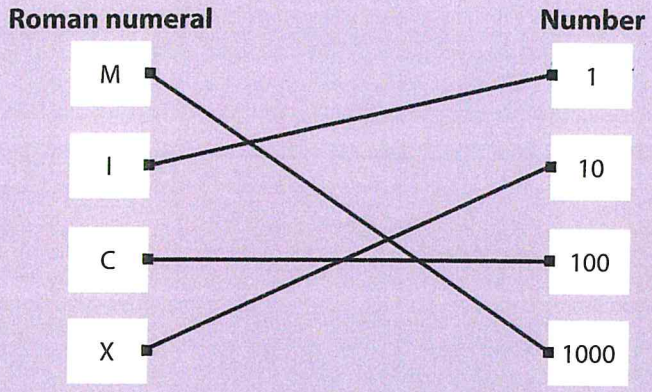
5

PoS N *Read Roman numerals to 1000 (M) and recognise years written in Roman numerals*

1m

Award **1 mark** for:

➤ **all four** numbers matched as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Do not accept:

➤ two or more lines drawn from the same Roman numeral or number

6

PoS C *Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate*

1m

Award **1 mark** for:

➤ 903

7

PoS F *Add and subtract fractions with the same denominator and denominators that are multiples of the same number*

1m

Award **1 mark** for:

➤ $\frac{57}{80}$

8

PoS N *Count backwards through zero to include negative numbers*

1m

Award **1 mark** for:

➤ –10

Accept:

➤ minus / negative 10

Do not accept:

➤ 10 –

9

PoS C *Multiply two-digit and three-digit numbers by a one-digit number using formal written layout*

1m

Award **1 mark** for:

- 7208

10

PoS C *Establish whether a number up to 100 is prime and recall prime numbers up to 19*

1m

Award **1 mark** for:

- the correct number circled as shown:

6 (7) 8 9

Accept:

- any other clear way of indicating the correct number, such as underlining or ticking

Do not accept:

- if additional incorrect numbers are circled

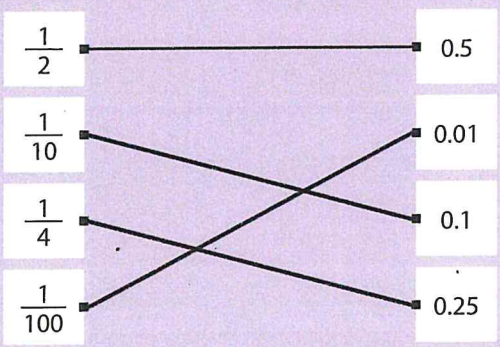
11

PoS F *Read and write decimal numbers as fractions [e.g. 0.71 = 71/ 100]*

1m

Award **1 mark** for:

- **all three** fractions matched as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Do not accept:

- two or more lines drawn from the same fraction or decimal

12

PoS C *Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context*

1m

Award **1 mark** for:

- 241

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13

PoS C *Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers*

1m

Award **1 mark** for:

➤ **both** numbers circled as shown:

(2) 4 8 12 16 (22)

Accept:

➤ any other clear way of indicating the two correct numbers, such as underlining or ticking

Do not accept:

➤ if additional incorrect numbers are circled

14

PoS N *Read, write, order and compare numbers to at least 1 000 000; and*
Determine the value of each digit in numbers up to 1 000 000

1m

Award **1 mark** for:

➤ 211 901

15

PoS C *Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)*

1m

Award **1 mark** for:

➤ 162 091

16

PoS F *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*

1m

Award **1 mark** for:

➤ 0.4

17

PoS F *Add and subtract fractions with the same denominator*

1m

Award **1 mark** for:

➤ $\frac{22}{53}$

18 PoS **C** *Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers*

1m

Award **1 mark** for:

➤ the correct number circled as shown:

3 (7) 28 56 105

Accept:

➤ any other clear way of indicating the correct number, such as underlining or ticking

Do not accept:

➤ if additional incorrect numbers are circled

19 PoS **C** *Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000*

1m

Award **1 mark** for:

➤ 40

20 PoS **F** *Compare and order fractions whose denominators are all multiples of the same number*

1m

Award **1 mark** for:

➤ the correct fraction circled as shown:

$\frac{1}{2}$ $\frac{7}{8}$ $\frac{3}{4}$ $\frac{1}{4}$ $\frac{3}{8}$

Accept:

➤ any other clear way of indicating the correct fraction, such as underlining or ticking

Do not accept:

➤ if additional incorrect fractions are circled

21 PoS **C** *Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers*

1m

Award **1 mark** for:

➤ 11 052

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22

PoS F *Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal*

1m

Award **1 mark** for:

➤ 0.36

Do not accept:

➤ 0.36%

23

PoS C *Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes*

1m

Award **1 mark** for:

➤ 50

24

PoS F *Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths*

1m

Award **1 mark** for:

➤ a fraction that is equivalent to $\frac{2}{5}$, eg:

- $\frac{4}{10}$

25

PoS C *Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)*

1m

Award **1 mark** for:

➤ 78 565

26

PoS C *Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000*

1m

Award **1 mark** for:

➤ **both** calculations correct as shown:

13.64 × 100 = **1364(.0)**

76.3 ÷ 10 = **7.63**

27

PoS C *Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})*

2m 1m

Award **2 marks** for **both** numbers correct as shown.
Award **1 mark** for **one** number correct:

➤ 4 9 16 **25** 36 **49**

28

PoS C *Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context*

1m

Award **1 mark** for:

➤ 395

29

PoS F *Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths*

1m

Award **1 mark** for:

➤ the correct fraction circled as shown:

$\frac{6}{2}$ $\frac{3}{6}$ $\frac{12}{9}$ $\frac{3}{10}$ $\frac{7}{21}$

Accept:

➤ any other clear way of indicating the correct fraction, such as underlining or ticking

Do not accept:

➤ if additional incorrect fractions are circled

30

PoS F *Round decimals with two decimal places to the nearest whole number and to one decimal place*

1m

Award **1 mark** for:

➤ 80 **AND**
11.8 [in that order]

Do not accept:

➤ 11.80 for 11.8

31

PoS C *Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)*

1m

Award **1 mark** for:

➤ 254 011

32

PoS C *Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers*

1m

Award **1 mark** for:

➤ **all three** numbers circled as shown:

29 (33) 61 (74) 83 (96)

Accept:

➤ any other clear way of indicating the three correct numbers, such as underlining or ticking

Do not accept:

➤ if additional incorrect numbers are circled

33

PoS N *Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000; and Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000*

1m

Award **1 mark** for:

➤ **all three** missing numbers completed as shown:

860 700 | **86 070** | 8607 | **860.7** | **86.07** | 8.607

Accept:

➤ a response retaining the zeros after the seven and the decimal point, eg:

860 700 | **86 070.0** | 8607 | **860.700** | **86.0700** | 8.607

34

PoS C *Multiply and divide numbers mentally drawing upon known facts*

1m

Award **1 mark** for:

➤ 7

35

PoS C *Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})*

1m

Award **1 mark** for:

➤ 64

36

PoS F *Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents*

1m

Award **1 mark** for:

➤ 0.551

37

PoS C *Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers*

2m Award **2 marks** for:

➤ 57 106

1m Award **1 mark** for:

➤ evidence of appropriate working involving a complete and correct formal method which contains no more than one arithmetical error, eg:

•
$$\begin{array}{rrrrr} & 4 & 0 & 7 & 9 \\ \times & & & 1 & 4 \\ \hline 1 & 6 & 2 & \mathbf{8} & 6 \\ 4 & 0 & 7 & 9 & 0 \\ \hline 5 & 7 & 0 & 7 & 6 \end{array}$$

•
$$\begin{array}{rrrrr} & 4 & 0 & 7 & 9 \\ \times & & & 1 & 4 \\ \hline 4 & \mathbf{1} & 7 & 9 & 0 \\ 1 & 6 & 3 & 1 & 6 \\ \hline 5 & 8 & 1 & 0 & 6 \end{array}$$

Do not accept:

➤ a response containing an error in place value:

•
$$\begin{array}{rrrrr} & 4 & 0 & 7 & 9 \\ \times & & & 1 & 4 \\ \hline 1 & 6 & 3 & 1 & 6 \\ & \mathbf{4} & \mathbf{0} & \mathbf{7} & \mathbf{9} \\ \hline 2 & 0 & 3 & 9 & 5 \end{array}$$

38

PoS C *Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers*

1m Award **1 mark** for:

➤ **all three** factor pairs given as shown:

6 and 7 **AND**

2 and 21 **AND**

3 and 14 [in any order]

Accept:

➤ numbers within factors pairs presented in either order, eg:

- 6 and 7 **OR** 7 and 6

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Answers to the practice questions

Reasoning Test 1

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Practice Questions

11 *a* Write a digit in each empty box to make a decimal number that rounds to **83.7**

8 3 . 7 1

1 mark

Any number in the range 83.65 to 83.74 inclusive

11 *b* Lola gets **£2** pocket money every week.

How much pocket money does Lola get in a year (**52** weeks)?

£ 104

1 mark

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You should work through the booklet until you are asked to stop. Answer as many questions as you can. If you find a question is too difficult, go on to the next one and come back to it later if you have time.

3

Mark scheme for Reasoning Test 1

1

PoS N *Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero*

1m

Award **1 mark** for:

- the correct temperature circled as shown:

3°C −1°C −9°C (5°C) −7°C

Accept:

- any other clear way of indicating the correct temperature, such as underlining or ticking

Do not accept:

- if additional incorrect temperatures are circled

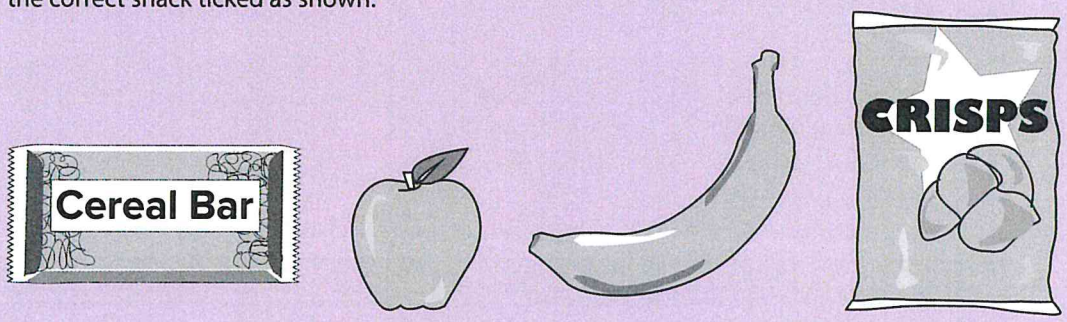
2

PoS F *Solve simple measure and money problems involving fractions and decimals to two decimal places*

a. 1m

Award **1 mark** for:

- the correct snack ticked as shown:



£0.70	£0.35	38p	47p
☐	☑	☐	☐

Accept:

- any other clear way of indicating the apple, such as underlining or circling

Do not accept:

- if additional incorrect snacks are ticked

b. 1m

Award **1 mark** for:

- £1.53

Accept:

- £1 53, £1.53p **OR** £1 53p
- 153p **OR** 1 53 written outside the box

Do not accept:

- £153 **OR** £153p
- 1.53p written outside the box

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3

PoS F *Round decimals with one decimal place to the nearest whole number*

1m

Award **1 mark** for:

- 6

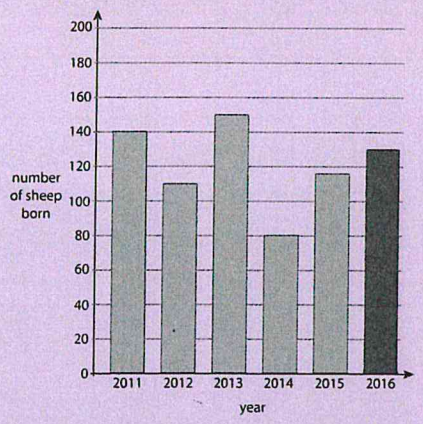
4

PoS S *Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs*

a. 1m

Award **1 mark** for:

- the bar drawn to 130 as shown:



Accept:

- a bar drawn between 125 and 135 inclusive
- a bar drawn without a ruler, provided the intention is clear
- a bar drawn without internal shading

b. 1m

Award **1 mark** for:

- an answer between 112 and 118 inclusive, eg:
  - 116

5 | **PoS M** | *Use all four operations to solve problems involving measures [money] using decimal notation, including scaling*

1m

Award **1 mark** for:

➤ the correct box ticked as shown:

how much the game will cost	☐
how much he will save each week	☐
how many weeks it will take to save the money he needs	☑
how much money he will have left when he buys the game	☐

Accept:

➤ any other clear way of indicating the correct box, such as writing 'Y' for yes or underlining

Do not accept:

➤ if additional incorrect boxes are ticked

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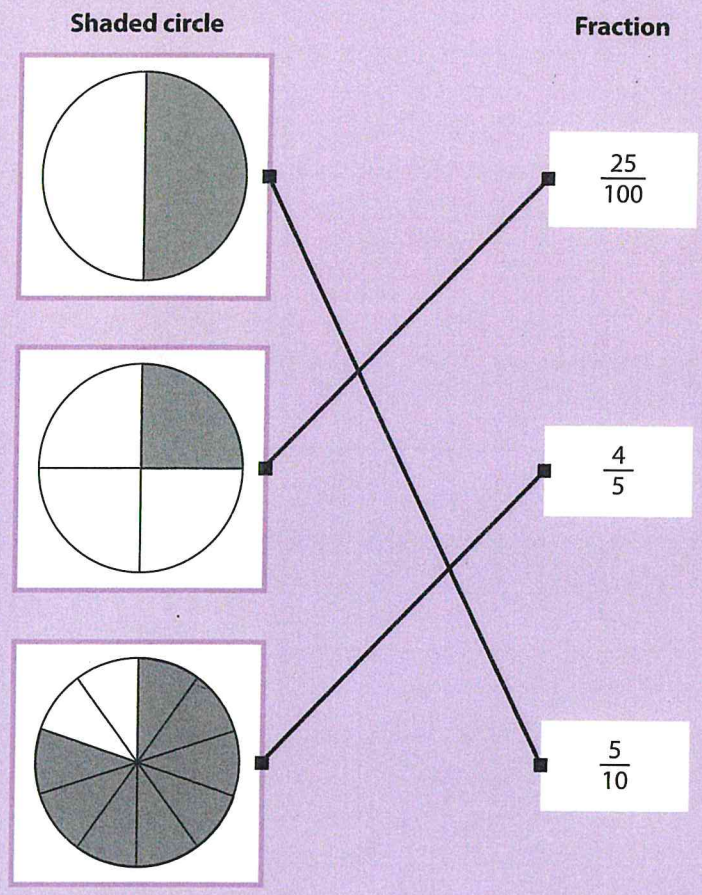
6 | **PoS F** | *Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths*

1m

Award **1 mark** for:

➤ **all three** circles matched as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Do not accept:

➤ two or more lines drawn from the same circle or fraction

7

PoS M *Solve problems involving converting between units of time*

2m

Award **2 marks** for:

➤ 255

1m

Award **1 mark** for:

➤ evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:

- $(4 \times 60) + 15 = 225$
- $4 \times 60 =$ [incorrect answer]
  [incorrect answer] + 15 = answer in the box

Accept:

➤ 25 as an indication of adding $\frac{1}{4}$ hour [assuming $\frac{1}{4}$ of 100 instead of 60], eg:

- $4 \times 60 = 240$
  $240 + 25 = 265$

Do not accept:

➤ any value except 25 as an indication of $\frac{1}{4}$ hour for 1 mark

8

PoS C *Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign*

1m

Award **1 mark** for:

➤ 7

9

PoS F *Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents*

1m

Award **1 mark** for:

➤ **both** correct numbers circled as shown:

8 tenths	(0.008)	0.08
(8 thousandths)	8 ones	80

Accept:

➤ any other clear way of indicating the two correct numbers, such as underlining or ticking

Do not accept:

➤ if additional incorrect numbers are circled

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10 | PoS **C** | *Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign*

1m

Award **1 mark** for:

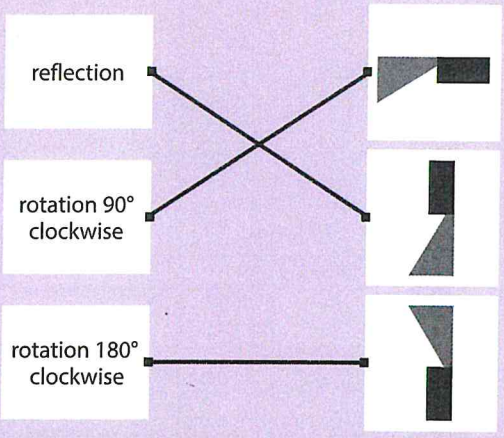
➤ 5

11 | PoS **P** | *Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed*

1m

Award **1 mark** for:

➤ **all three** shapes matched as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Do not accept:

➤ two or more lines drawn from the same action or shape

12

PoS C *Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign; and*
Use all four operations to solve problems involving measures [money] using decimal notation, including scaling

2m

Award **2 marks** for:

- £426.00 **OR** £426

Accept:

- £426 00, £426 00p **OR** £426.00p
- 42600p **OR** 426 written outside the box

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:
  - $10 \times 30 = 300$
    $7 \times 18 =$ [incorrect answer]
    $300 +$ [incorrect answer] = answer in the box
- evidence of appropriate working giving a correct answer which has been inaccurately written [with or without appropriate calculations], eg:
  - £42600, £42600p, £426p **OR** £426.0
  - 426.00p written outside the box

13

PoS F *Add and subtract fractions with the same denominator and denominators that are multiples of the same number*

1m

Award **1 mark** for:

- $\frac{3}{12}$ **OR** equivalent fraction, eg:
  - $\frac{1}{4}$

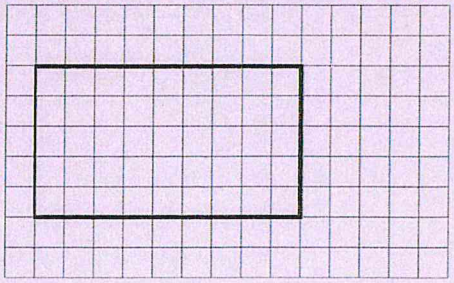
14

PoS G *Use the properties of rectangles to deduce related facts and find missing lengths and angles; and*
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

1m

Award **1 mark** for:

- a rectangle that measures 5 cm × 9 cm, eg:
  -



Accept:

- drawing errors of no more than 2 mm

Do not accept:

- rectangles that are drawn incorrectly but labelled correctly

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15

PoS F

a. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal; and

b. Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

a. 1m

Award **1 mark** for:

➤ 0.26

b. 1m

Award **1 mark** for:

➤ 5

16

PoS C

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 n objects are connected to m objects

1m

Award **1 mark** for:

➤ a response identifying that Jenny needs to know the total number of classes **OR** the total number of pupils in her school, eg:

- how many classes there are
- the number of pupils in the school

Accept:

➤ a response indicating Jenny needs to know how many pupils there are in each class [therefore implying she knows how many classes there are], eg:

- how many children are in the other classes?

➤ a response indicating that Jenny needs to know if the number of pupils in each class is [roughly] the same **in addition** to knowing the number of classes in the school.

Do not accept:

➤ a response stating Jenny must find out the number of people in each class with blue eyes [this would be a survey to find the true value, not an estimation]

➤ incomplete responses, eg:

- how many pupils
- how many in each class

17

PoS N

Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

1m

Award **1 mark** for:

➤ 981

18

PoS C

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy; and

Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

1m

Award **1 mark** for:

➤ the correct box ticked as shown:

3000	☐	8000	☑
12 000	☐	25 000	☐

Accept:

➤ any other clear way of indicating the correct answers, such as underlining or circling

Do not accept:

➤ if additional incorrect boxes are ticked

19

PoS C

Recall multiplication and division facts for multiplication tables up to 12 × 12

1m

Award **1 mark** for:

➤ **all three** statements classified as shown:

	True	False
All numbers in the 6 times table divide by 3	☑	☐
All numbers in the 6 times table are even.	☑	☐
All numbers in the 6 times table are multiples of 12	☐	☑

Accept:

➤ any other clear way of indicating the correct answers, such as writing 'T' and 'F'

20

PoS M

Convert between different units of metric measure [e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]; and

Use all four operations to solve problems involving measure [e.g. mass] using decimal notation, including scaling

2m

Award **2 marks** for:

➤ 725

1m

Award **1 mark** for:

➤ evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:

- 2000 – 1775 = [incorrect answer]
  [incorrect answer] + 500 = answer in the box

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21

PoS F *Solve problems involving numbers up to three decimal places*

1m

Award **1 mark** for:

- 0.717

22

PoS C *Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context*

1m

Award **1 mark** for:

- 728 **AND**
  2 [in that order]

Accept:

- a response in which the number of blocks each class has and the left over blocks are given in one response and the second answer box is left blank, eg:
  - 728 r 2 [in one answer box]

23

PoS F *Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number [e.g. 2/5 + 4/5 = 6/5 = 1 1/5]*

1m

Award **1 mark** for:

- **both** fraction sentences completed as shown:

$\frac{5}{3} > 1$ **AND** $\frac{3}{7} < 1$

OR

$\frac{7}{3} > 1$ **AND** $\frac{3}{5} < 1$

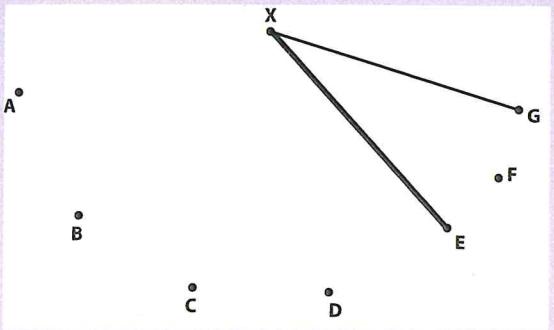
24

PoS G *Draw given angles and measure them in degrees (°)*

1m

Award **1 mark** for:

- a line drawn to **E** as shown:



Accept:

- a line drawn without a ruler, provided the intention is clear

Do not accept:

- if additional incorrect lines are drawn

25

PoS N *Use place value and number facts to solve number problems and practical problems with numbers up to 1 000 000; and*
Read Roman numerals to 1000 (M) and recoognise years written in Roman numerals

2m

Award **2 marks** for:

- 55

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method in which both film dates are correct and there is no more than one arithmetical error, eg:
  - 2015 – 1960 = incorrect answer
- a correct method with no arithmetical error but where one film date has been translated incorrectly, eg:
  - **2160** – 2015 = 145
  - **2055** – 1960 = 95

26

PoS C *Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes*

1m

Award **1 mark** for:

- 11

27

PoS M *Use all four operations to solve problems involving measures [money] using decimal notation, including scaling*

2m

Award **2 marks** for:

- 24

Accept:

- £0.24p **OR** £0 24p
- £0.24 **OR** 24 written outside the box

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method, which contains no more than one arithmetical error, eg:
  - £10 – £8.56 = [incorrect answer]
    [incorrect answer] ÷ 6 = answer in the box
  - £10 – £8.56 = £1.44
    £1.44 ÷ 6 = no answer given
- evidence of appropriate working giving a correct answer which has been inaccurately written [with or without appropriate calculations], eg:
  - £24p, £24 **OR** 0.24p

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Mark scheme for Reasoning Test 2

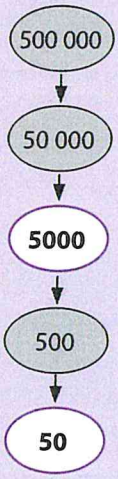
1

PoS C *Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000*

1m

Award **1 mark** for:

➤ **both** ovals completed as shown:



2

PoS G *Identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and 1/2 a turn (total 180°), and other multiples of 90°*

1m

Award **1 mark** for:

➤ 90

3

PoS C *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 n objects are connected to m objects*

1m

Award **1 mark** for:

➤ £84

Accept:

➤ £84.00, £84.00p, £84 00 **OR** £84 00p

➤ 8400p **OR** 84 00 written outside the box

Do not accept:

➤ £8400p, £8400, £84.0 **OR** £84p

➤ 84.00p written outside the box

4

PoS N *Count in multiples of 6, 7, 9, 25 and 1000; and*
Identify, represent and estimate numbers using different representations

1m

Award **1 mark** for:

➤ 125 **AND** 225 [in that order]

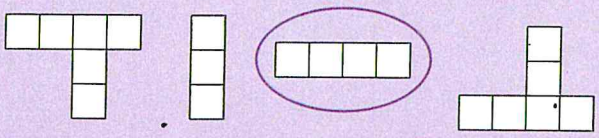
5

PoS G *Identify 3-D shapes including cubes and other cuboids, from 2-D representations*

1m

Award **1 mark** for:

- the correct diagram circled as shown:



Accept:

- any other clear way of indicating the correct diagram, such as underlining or ticking

Do not accept:

- if additional incorrect diagrams are circled

6

PoS C *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 n objects are connected to m objects*

2m

Award **2 marks** for:

- $60 \times 4 = 240$
  $3 \times 4 = 12$
  } in either order
  $240 + 12 = 252$

Accept:

- addition numbers can be in either order

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:
  - $60 \times 4 = \mathbf{180}$
    $4 \times 3 = 12$
    $12 + \mathbf{180} = 192$
- two of the three calculations correct (with or without a third incorrect calculation), eg:
  - $4 \times 3 = 12$
    $60 \times 4 = 240$

7

PoS N *Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero*

1m

Award **1 mark** for:

- –3

Accept:

- minus / negative 3

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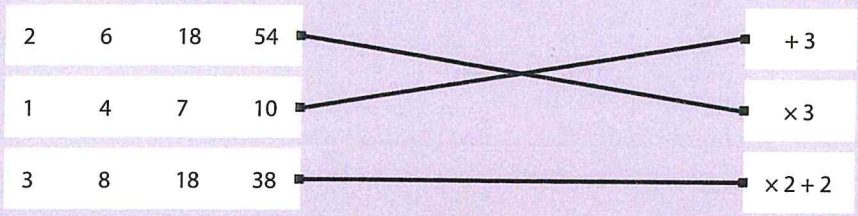
8

PoS C *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 n objects are connected to m objects*

1m

Award **1 mark** for:

➤ **all three** sequences matched as shown:



Lines need not touch the boxes exactly, provided the intention is clear

Do not accept:

➤ two or more lines drawn from the same sequence or rule

9

PoS P *Describe positions on a 2-D grid as co-ordinates in the first quadrant*

1m

Award **1 mark** for:

➤ (5, 6)

Accept:

➤ a correct answer written on the diagram with or without brackets

Do not accept:

➤ a cross drawn on the grid without correct coordinates written

➤ reversed coordinates

➤ $x = 5, y = 6$

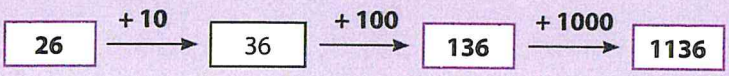
10

PoS N *Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000*

1m

Award **1 mark** for:

➤ **all three** boxes completed as shown:



11

PoS C *Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why*

1m

Award **1 mark** for:

➤ 27

12

PoS M *Solve problems involving converting between units of time*

1m

Award **1 mark** for:

➤ B

Accept:

➤ 1 hour 48 (minutes) **OR** 16:15

13

PoS F *Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25*

1m

Award **1 mark** for:

➤ the correct percentage circled as shown:

20% 25% (40%) 50%

Accept:

➤ any other clear way of indicating the correct percentage, such as ticking or underlining

Do not accept:

➤ if additional incorrect percentages are circled

14

PoS C *Recall multiplication and division facts for multiplication tables up to 12 × 12; and*

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

1m

Award **1 mark** for:

➤ a response which corrects Jenny's error giving the true answer, eg:

- 20 × 7 = 140 (not 27)

➤ a response identifying that Jenny has added the 7 (instead of multiplying it), eg:

- she added instead of timesing
- she did 20 + 7

Do not accept:

➤ a response identifying the incorrect calculation without specifying why it is incorrect, eg:

- 20 × 7 is not 27
- 20 × 7 is wrong
- 20 × 7 = 27

➤ a response indicating a conceptual misunderstanding that Jenny was incorrect to multiply in the given order and that the calculations should have been carried out in an alternative order, eg:

- she should have done 5 × 4 and 7 × 4
- 5 × 7 = 35 35 × 4 = 140

➤ a response including incorrect arithmetic, eg:

- 20 × 7 is 170

➤ a response which does not identify the error, eg:

- Jenny calculated it wrong
- she did not times it properly
- she wrote the wrong numbers

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15

PoS N *Determine the value of each digit in numbers up to 1 000 000*

1m

Award **1 mark** for:

➤ **both** correct numbers ticked as shown:

32 393	✓	373 335		43 330	
335 633		37 733		438 338	✓

Accept:

➤ any other clear way of indicating the two correct numbers, such as underlining or circling

Do not accept:

➤ if additional incorrect numbers are ticked

16

PoS M *Calculate different measures, including money in pounds and pence*

1m

Award **1 mark** for:

➤ 30.8

17

PoS F *Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25*

1m

Award **1 mark** for:

➤ 50

18

PoS M *Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints*

1m

Award **1 mark** for:

➤ the correct answer circled as shown:

10 cm (20 cm) 30 cm 40 cm

Accept:

➤ any other clear way of indicating the correct answer, such as underlining or ticking

Do not accept:

➤ if additional incorrect answers are circled

19

PoS F *Read, write, order and compare numbers with up to three decimal places; and Solve problems involving numbers up to three decimal places*

1m

Award **1 mark** for:

- 0.512 **OR** 0.521 **AND** 0.215 [in that order]

20

PoS C *Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates*

1m

Award **1 mark** for:

- 36

21

PoS S *Solve comparison, sum and difference problems using information presented in a line graph*

1m

Award **1 mark** for:

- 7

Accept:

- an answer between 6 and 8 exclusive, eg:
  - 7.5
  - 6.7

22

PoS C *Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why*

2m

Award **2 marks** for:

- 408

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:
  - 111 – 25 = 86
    89 + 33 = **92**
    86 + **92** + 111 + 89 = 378

Accept:

- a response which uses 86 lengths [for Fred] and 122 lengths [for Jenny] as evidence that 111 – 25 and 89 + 33 have been calculated respectively, eg:
  - 111 + 86 + 89 + 122 = incorrect answer

Do not accept:

- an incorrect value for Fred or Jenny without evidence of how the value was calculated, eg:
  - 111 + 86 + 89 + **121** = 407

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23

PoS N *Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000*

1m

Award **1 mark** for:

➤ **both** cells of the table completed as shown:

Fact	Value	Round to the nearest	Answer
length of day	1436 min	10 min	**1440** min
distance around the equator	40 075 km	100 km	**40 100** km

24

PoS F *Solve problems involving numbers up to three decimal places*

2m Award **2 marks** for **all three** boxes completed as shown.

1m Award **1 mark** for **any two** boxes completed:

➤

2.2	2.8	2.2
2.4	2.4	**2.4**
2.6	**2(.0)**	**2.6**

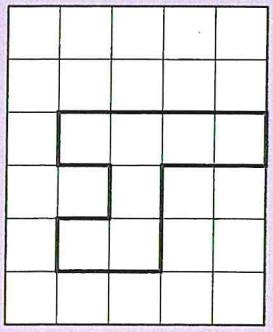
25

PoS P *Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed*

1m

Award **1 mark** for:

➤ the shape, drawn in any location on the grid, rotated to the correct orientation as shown:



Accept:

➤ a shape drawn without a ruler, provided the intention is clear

26

PoS C

Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates; and

Use all four operations to solve problems involving measures [money] using decimal notation, including scaling

2m

Award **2 marks** for:

- £4.80

Accept:

- £4 80, £4.80p **OR** £4 80p
- 480p **OR** 4.80 written outside the box

1m

Award **1 mark** for:

- evidence of appropriate working involving a complete and correct method which contains no more than one arithmetical error, eg:
  - 16 + 8 = 24
    24 × 20 = incorrect answer
  - 16 × 20 = 320
    8 × 20 = 160
    320 + 160 = incorrect answer
- evidence of appropriate working giving a correct answer which has been inaccurately written [with or without calculations], eg:
  - £480p, £4.8, £4.8p **OR** £480
  - 4.80p written outside the box

27

PoS F

Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number [e.g. 2/5 + 4/5 = 6/5 = 1 1/5]; and

Add and subtract fractions with the same denominator and denominators that are multiples of the same number

1m

Award **1 mark** for:

- **both** correct fractions circled as shown:

$\frac{1}{3}$ $\frac{2}{3}$ $\frac{4}{3}$ $\frac{5}{3}$ $\frac{8}{3}$

Accept:

- any other clear way of indicating the two correct fractions, such as underlining or ticking

Do not accept:

- if additional incorrect fractions are circled

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28 | PoS **G** | *Identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and 1/2 a turn (total 180°) and other multiples of 90°*

a. 1m

Award **1 mark** for:

➤ 40

Accept:

➤ the correct answer written on the appropriate angle on the diagram

b. 1m

Award **1 mark** for:

➤ 45

Accept:

➤ the correct answer written on an appropriate angle on the diagram

29 | PoS **C** | *Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes*

1m

Award **1 mark** for:

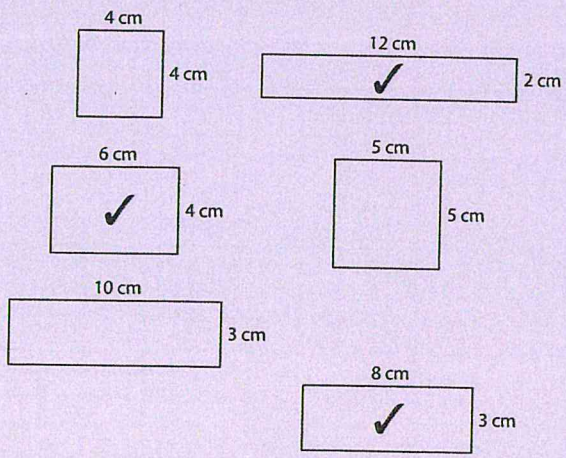
➤ 7

30 | PoS **M** | *Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes*

1m

Award **1 mark** for:

➤ **all three** shapes ticked as shown:



Accept:

➤ any other clear way of indicating the three correct shapes, such as circling or underlining

Do not accept:

➤ if additional incorrect shapes are ticked

Outcomes of the test

Tests should be administered and marked in line with the guidance provided in this guide. This will ensure that the raw scores can be reliably converted into standardised and age standardised scores.

The questions in the test have been mapped to the National Curriculum Programmes of Study for mathematics. This mapping provides information about the discrete skill or process a pupil needs to use to answer each question effectively. Using these will allow you to track a pupil's progress. For diagnostic purposes this will enable you to look at distinct aspects of mathematics.

Further information about how the test was developed and technical data relating to the sampling, trialling and standardisation are available from the following website:

http://www.nfer.ac.uk/schools/nfer-tests/