Mathematics test **2014**

Subject knowledge audit
for self assessment and target setting

Name:

School:

Your Mathematical Journey

This booklet is designed to support your own personal mathematical learning to supplement the training in teaching and pedagogical skills during this project.

This is a self-assessment document to enable YOU to identify any areas of mathematical knowledge where you might need support.

The questions are based on the Year 6 programme of study as given in the National Curriculum dated September 2013.

Please complete this booklet with the answers to the questions and your working out, so that when you return to it, you will be able to see your mathematical processes. You may answer the questions in any order. Please do not use a calculator.

For each question there is a confidence rating scale for you to complete:

1. A confidence rating for your own understanding of the question

2. A confidence rating for your ability to explain the question to someone else

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

When we have looked at your audit, we will photocopy and return it to you together with the solutions, to enable you to monitor your mathematical journey.

Section 1 – Shape, space and measures

Q1. Shade **two** squares and **one** triangle to make this design symmetrical about the mirror line.
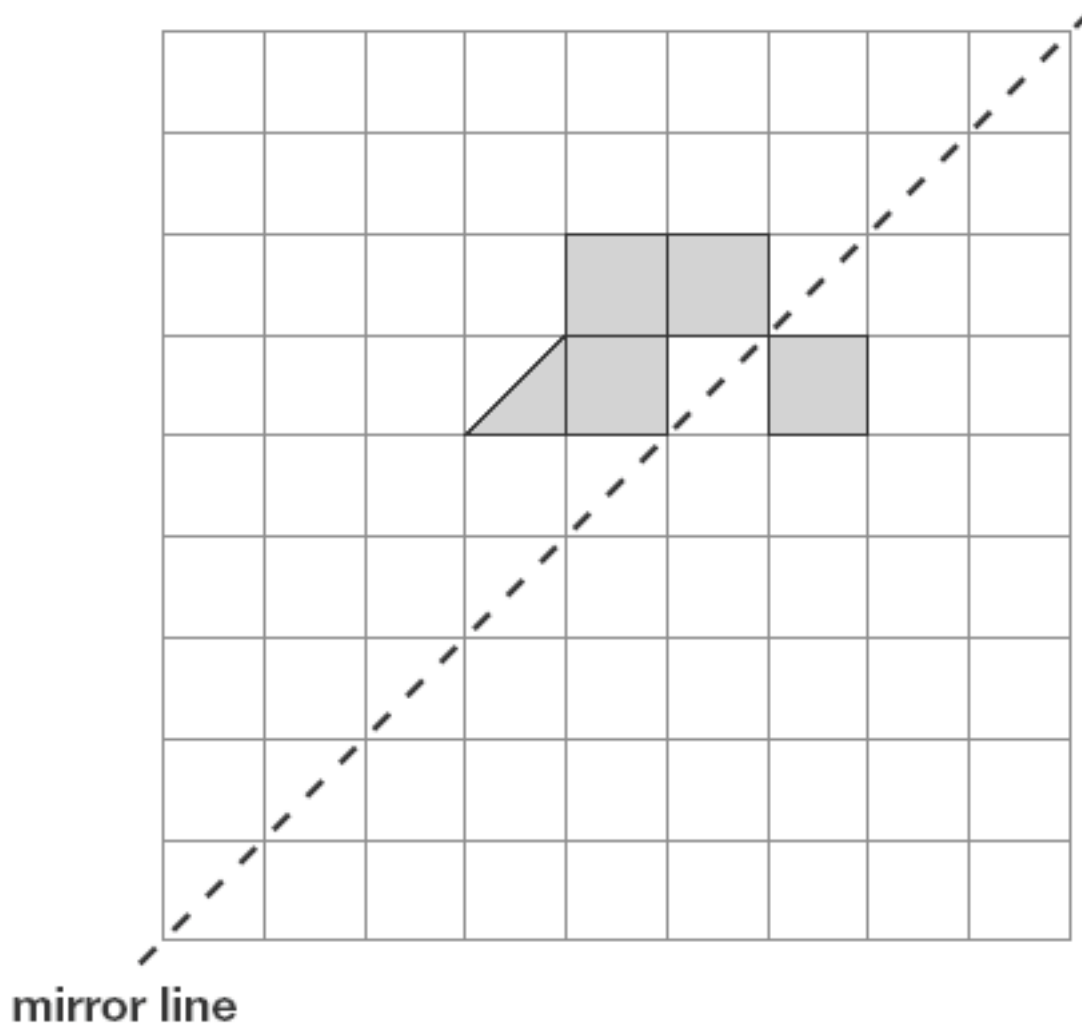
mirror line

[3 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q2. The area of a rectangle is 16cm².
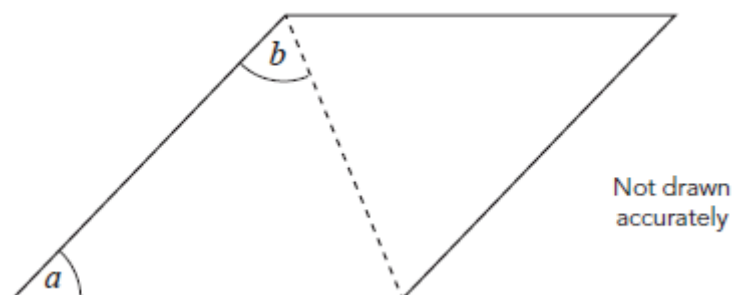
One of the sides is 2cm long

What is the perimeter of the rectangle?

[3 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

4

Q3. The dotted line is a diagonal of this **rhombus**.

Not drawn accurately

(a) If angle a = 80°, what is angle b?

(b) If angle b = 80°, what is angle a?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q4. Here is a line on coordinate axes.
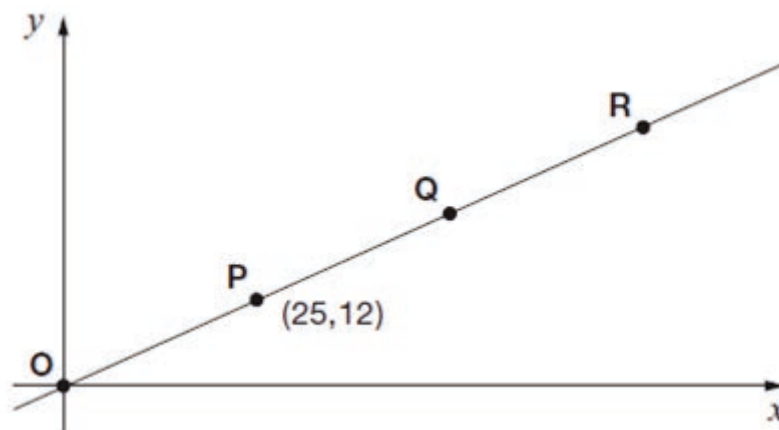
Points **O**, **P**, **Q** and **R** are equally spaced.

The coordinates of **P** are (25,12).

What are the coordinates of **R**?

[4 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q5.

(a) Write these lengths in order, starting with the shortest.

½m   3.5cm   25mm   20cm

(b) Cheddar cheese costs £10.50 for 1 kg. Meg buys 200 grams.

How much does she pay?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Section 2 – Handling Data

Q6. Here is some information about pupils in a class.

The total number of pupils is 30.

26 of the pupils do not wear glasses.

A quarter of the pupils who do wear glasses are boys.

There are two more boys than girls.

Use this information to fill in the missing numbers in the table.

	Number who wear glasses	Number who do not wear glasses	Total
Boys			
Girls			
Total			30

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q7. Here are four numbers with a mean of 4 and a range of 0.

| 4 | 4 | 4 | 4 |

Find four numbers with a mean of 4 and a range of 4.

[5 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q8. How fast you can type accurately is called your typing speed.

The regions of the graph show information about different typing speeds.
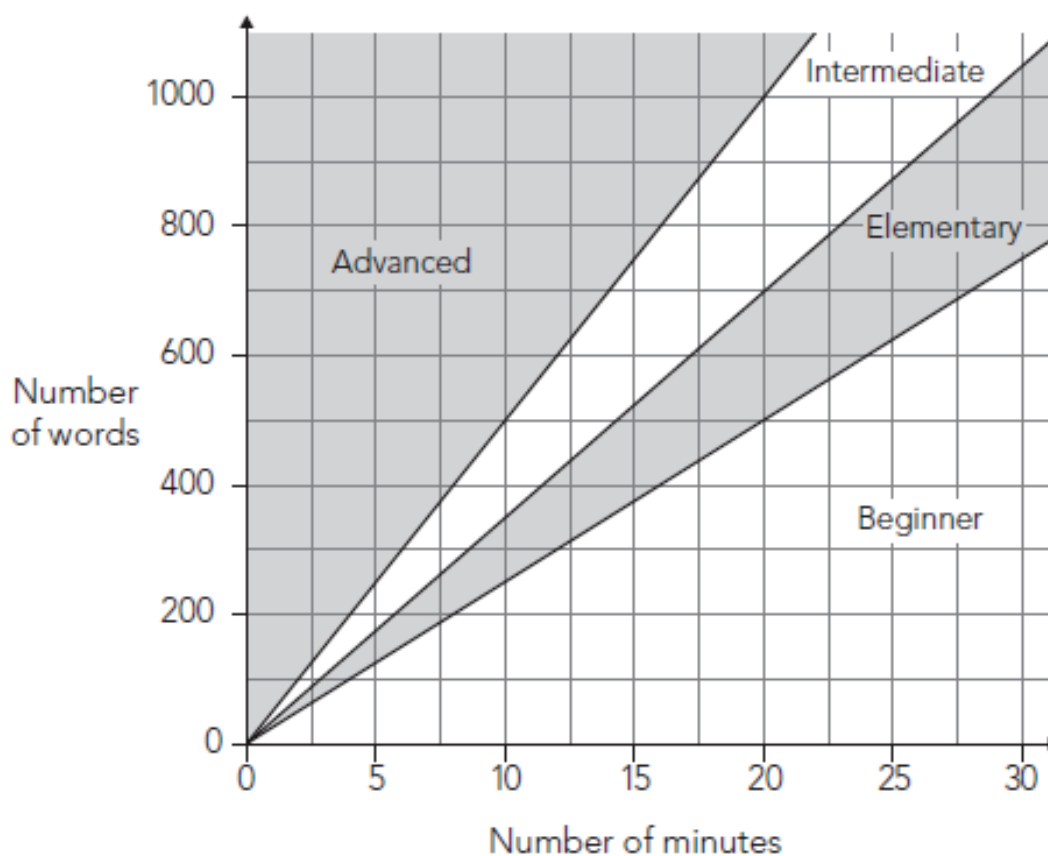
Darren's level of typing is **elementary**.

In **20 minutes** he should be able to type between 500 and 700 words.

Jo's level of typing is **intermediate**.

How many words should she be able to type in **20 minutes**?

Between _____ and _____

Kath's typing speed is **30 words per minute**.

What level is Kath's typing?

|	Advanced
	Intermediate
	Elementary
	Beginner

Explain how you know.

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q9. This pie chart shows how the children in Class 6 best like their potatoes cooked.
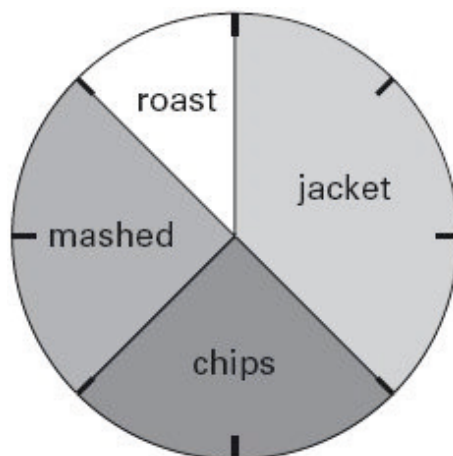
32 children took part in the survey.

Look at the four statements below.
For each statement put a tick (✓) if it is **correct**.
Put a cross (✗) if it is **not correct**.

10 children like chips best

25% of the children like mashed potatoes best

⅛ of the children like roast potatoes best

12 children like jacket potatoes best

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q10. This chart shows the favourite snacks of some boys and girls.
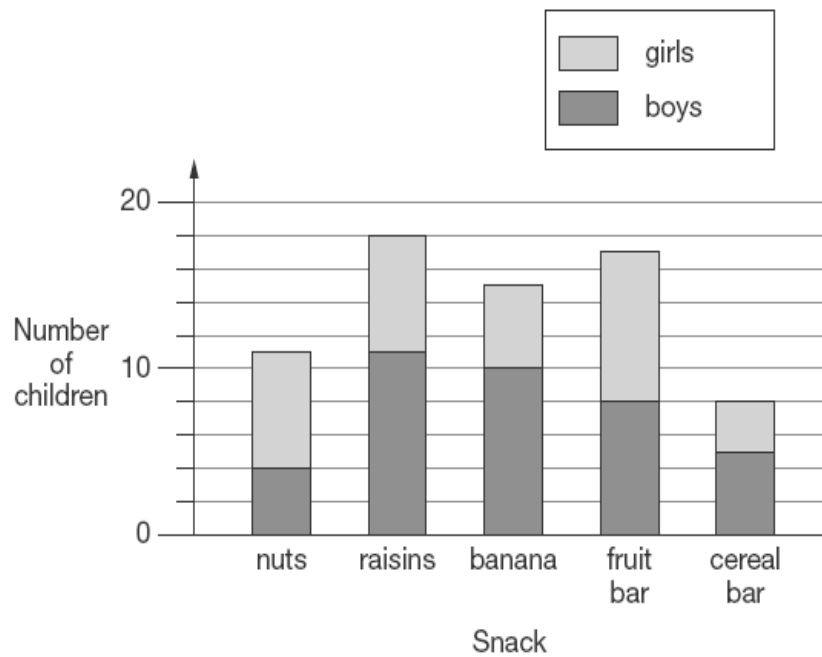
How many snacks did more girls than boys choose?

How many more boys than girls chose raisins?

Which snack did **twice** as many boys as girls choose?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Section 3 – Calculating (Fractions, decimals, percentages, ratio and proportional reasoning)

Q11. Put the following in order, starting with the smallest.

21% $\frac{3}{20}$ 0.18 $\frac{8}{50}$

[5 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q12. In a survey of 72 pupils at a Primary School, each was asked to name their favourite sport: ⅓ liked football best, ¼ liked basketball, ⅜ liked athletics and the rest liked swimming. How many pupils liked swimming?

[5 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q13.

(a)   Three-quarters of a number is 60. What is the number?

(b)   What is 10% of a half?

(c)   20% of a number is 64. What is 50% of the number?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q14.

(a)   Eight pens cost £10.80. How much do five pens cost?

(b)   Green paint is made by mixing blue paint with yellow paint in the ratio 2:3. If we want to make 250ml of green paint, how much blue paint is needed?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q15. Lucy bought a pair of jeans in a sale that advertised "25% off".
If the jeans cost her £30, what was the original price?

[4 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Section 4 – Algebra

Q16. In this sequence each number is double the previous number.
Work out the missing numbers.

| ? | ? | 5 | 10 | 20 | 40 | 80 | ? |

[5 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q17.

(a)   Find the value of t in this equation.

$4 + t = 9t$

(b)   Find the value of w in this equation.

$3w - 6 = 7 + 2w$

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q18.

(a) The length of a rectangle is three times its width.
If its perimeter is 24 cm, what is its area?

(b) Vicky has 24 centimetre cubes, She uses all 24 cubes to make a cuboid with dimensions 6cm, 2cm and 2cm. What could be the dimensions of a different cuboid she could make using all 24 cubes?

(c) Barney has 20 centimetre cubes.
He wants to make a cube with edges 3cm long.
How many more centimetre cubes does he need?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

Q19. You can work out the cost of an advert in a newspaper by using this formula.

$C = 15n + 75$

where C is the cost in pounds, and n is the number of words in the advert.

(a) An advert has 22 words. Work out the cost of the advert.

(b) The cost of another advert is £825. How many words are there in the advert?

[6 marks]

How confident were you answering this question?	1	2	3	4
How confident are you that you could teach a child so that they would understand?	1	2	3	4

Confidence ratings are on a scale from 1 (not at all confident) to 4 (very confident).

END OF TEST