United Curriculum
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United Curriculum
End-of-Year Assessment 2023-24

Mathematics

Time: 1 hour

Year 9

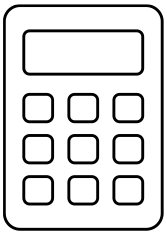
Paper 2 – Calculator assessment

Student surname:

Student first name(s):

Class Name / Number:

You must have: a pencil, tracing paper, a protractor and a scientific calculator.



Instructions

- Fill in the boxes on the front page.
- Use a black ink pen. Draw diagrams in pencil.
- You may use a calculator.
- The marks for each question are shown.
- Answer the questions in the space provided.
- Show **clearly** how you work out your answer.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Advice

- Read each question carefully before you begin.
- Try your best to answer every question. If you have time, go back and review your answers.

For Teacher use only:

TOTAL MARKS		PERCENTAGE
	60	

Question 1

Put these temperatures in order from lowest to highest.

$-0.1°C$ $-4°C$ $0°C$ $5°C$

....

1

Question 2

Write $\frac{7}{10}$ as a percentage.

Answer = ... %

1

Question 3

Simplify fully

$3a^2 - a^2$

Answer = ...

1

Question 4

Simplify fully

$$\frac{10cd}{5ce}$$

Answer = ...

1

Question 5

5a. Solve

$$\frac{x}{6} = 3.9$$

Answer = ...

1

5b. Solve

$$x + 102 = 79$$

1

Answer = ...

Question 6

There are 10 letters in a bag.

A A B B B C E E E F

What is the probability of randomly selecting the letter B?

1

Answer = ...

Question 7

It takes 60 minutes to fill a hot tub from 2 taps.

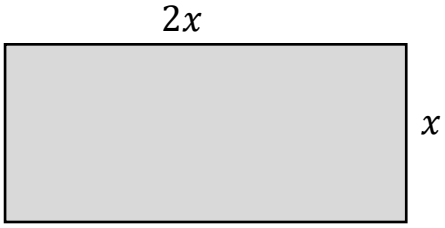
How long will it take to fill the hot tub if 3 taps are used?

2

Answer = ...

Question 8

The **perimeter** of the rectangle is **30 cm**.



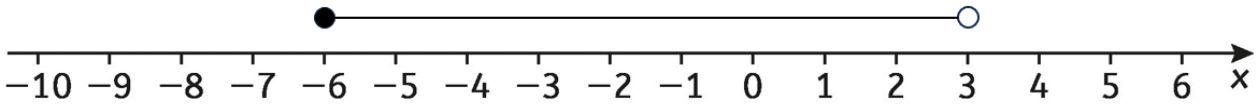
What is the **area** of the rectangle?

Answer = ... cm^2

3

Question 9

Circle the inequality shown by the diagram.



$-6 \leq x < 3$ $-6 \leq x \leq 3$ $-6 < x < 3$ $-6 < x \leq 3$

1

Question 10

Simplify

10a. $4^5 \times 4^4$

Answer = ...

1

10b. $\frac{5^{11}}{5^5}$

Answer = ...

1

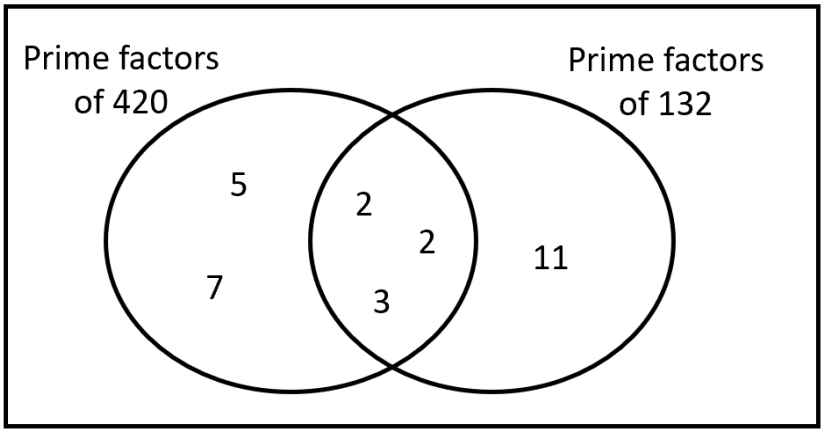
10c. $(11^3)^4$

Answer = ...

1

Question 11

A Venn diagram is shown below.



11a. Use the Venn diagram to find the highest common factor of 420 and 132.

Answer = ...

	1

11b. Use the Venn diagram to find the lowest common multiple of 420 and 132.

Answer = ...

	1

Question 12

Harry is travelling to America.

He needs to change his spending money from British Pounds (£) to American Dollars ($).

The current exchange rate is

$$£1 = \$1.24$$

Harry is taking £300 spending money.

12a. How many American Dollars ($) will Harry have?

Answer = $ .....

1

12b. On his holiday Harry spends $272.80.

Any money he has left over he is planning to convert back to British Pounds once he returns to the UK.

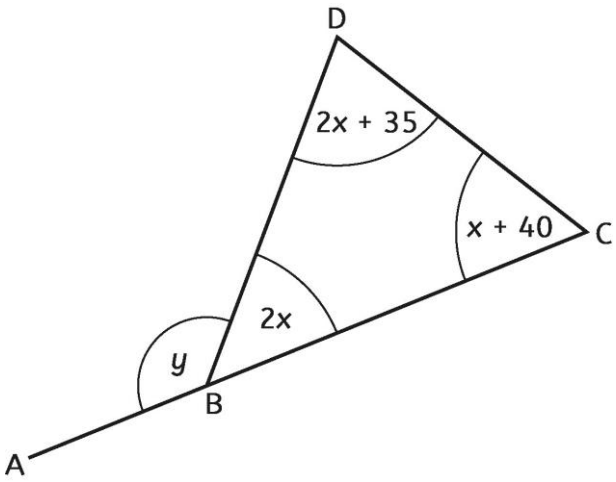
If the exchange rate stays the same how many British Pounds will he have when he gets home?

Answer = £ .....

3

Question 13

Triangle BCD sits on straight line ABC.



Work out the value of y.

Answer = ...

3

Question 14

Scientists often change between using degrees Celsius (°C) and degrees Fahrenheit (°F).

They use this formula.

$$F = \frac{9}{5}C + 32$$

Using this formula, find the difference between the surface temperatures of The Sun and Venus.

Give your answer in degrees Fahrenheit (°F).

- The sun's surface temperature is $5600°C$.
- Venus's surface temperature is $869°F$.

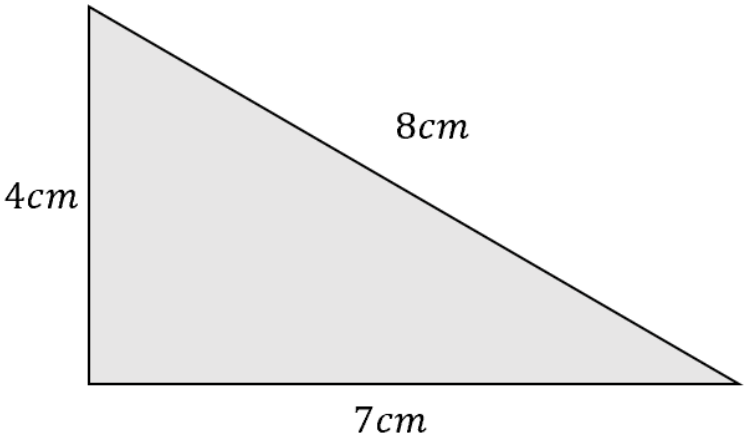
Answer = ... °F

3

Question 15

Use Pythagoras' theorem to show that the triangle below is **not** right angled.

Not drawn accurately

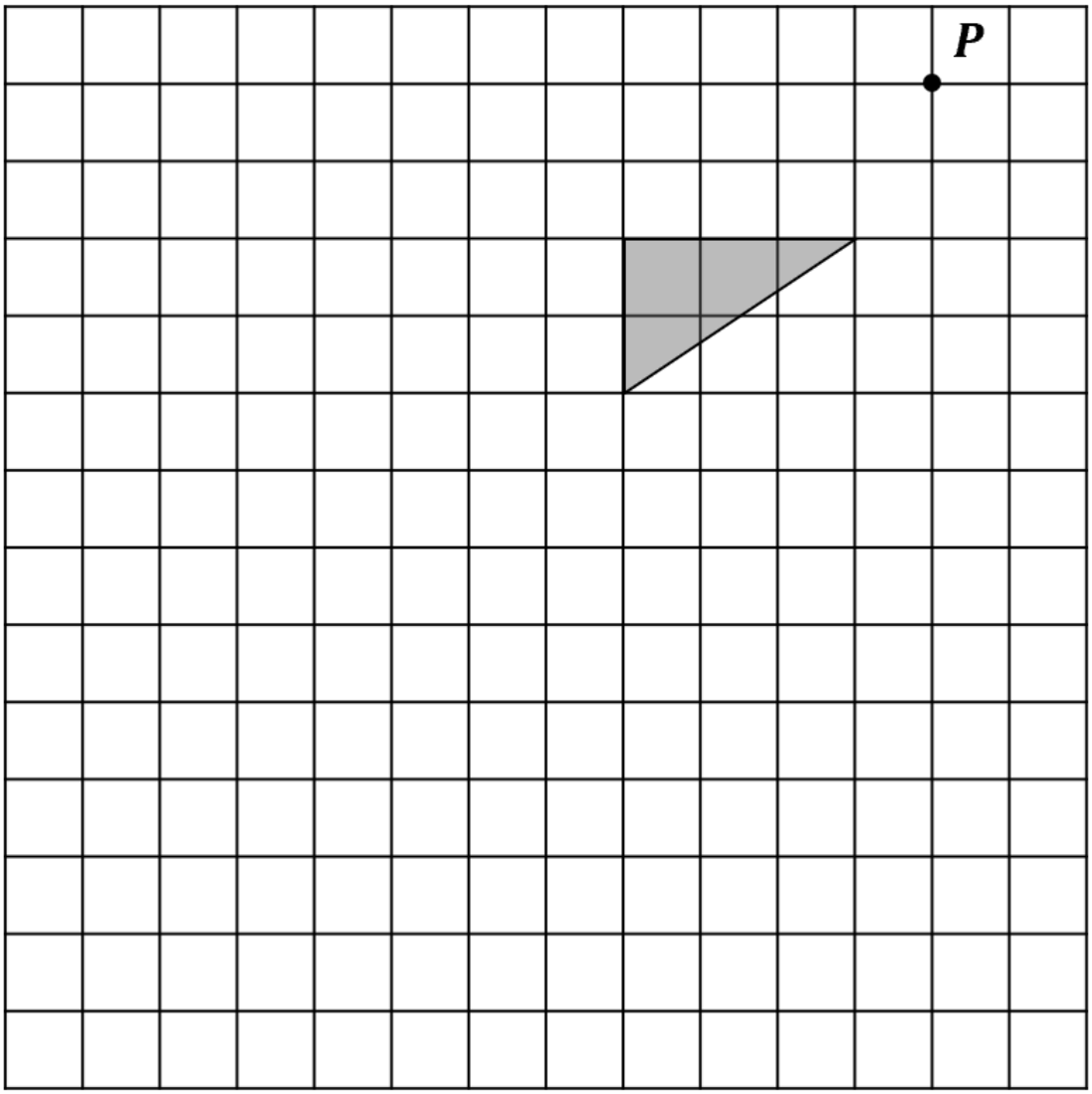


2

Question 16

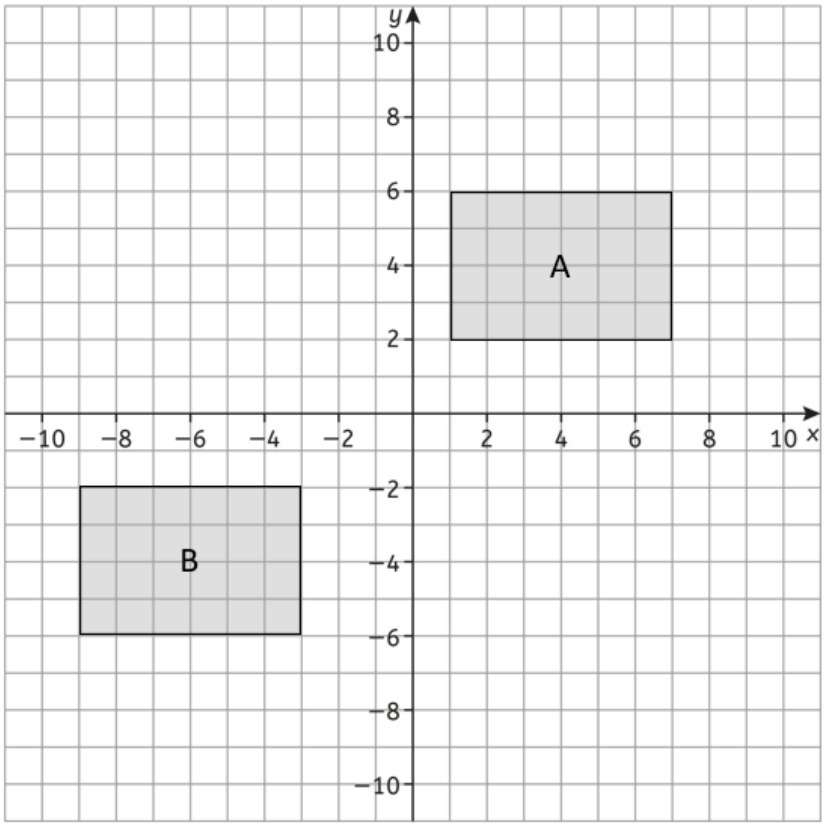
16a. Enlarge this shape by a scale factor of 3.

The centre of enlargement is point *P*.



	2

16b. Describe fully the **single** transformation that maps shape *A* to shape *B*.



2

Question 17

n is an integer.

$$-1 < 2n + 1 \leq 6$$

Write down all the possible values of *n*.

Answer = ...

3

Question 18

Simplify

$$\frac{16b}{3} + \frac{3b}{4}$$

Give your answer as a single fraction in its simplest form.

Answer = ...

	2

Question 19

A linear sequence is shown below.

$$6, 13, 20, 27, \ldots$$

19a. Explain how you get the next term in the sequence.

.....

	1

19b. What is the nth term of the sequence?

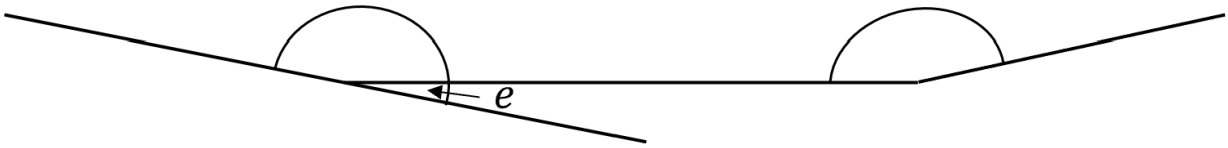
Answer = ...

	2

Question 20

The diagram shows part of a regular polygon.

The exterior angle $e = 18°$.



Work out the number of sides of this regular polygon.

Answer = ...

2

Question 21

The length of a sofa is $2.15m$ to the nearest cm.

Complete the error interval.

2

Answer = ... $m \leq$ length < ..... m

Question 22

22a. Factorise $x^2 - 9x + 20$

Answer = ...

2

22b. Expand and simplify $(x - 2)(x + 9)$

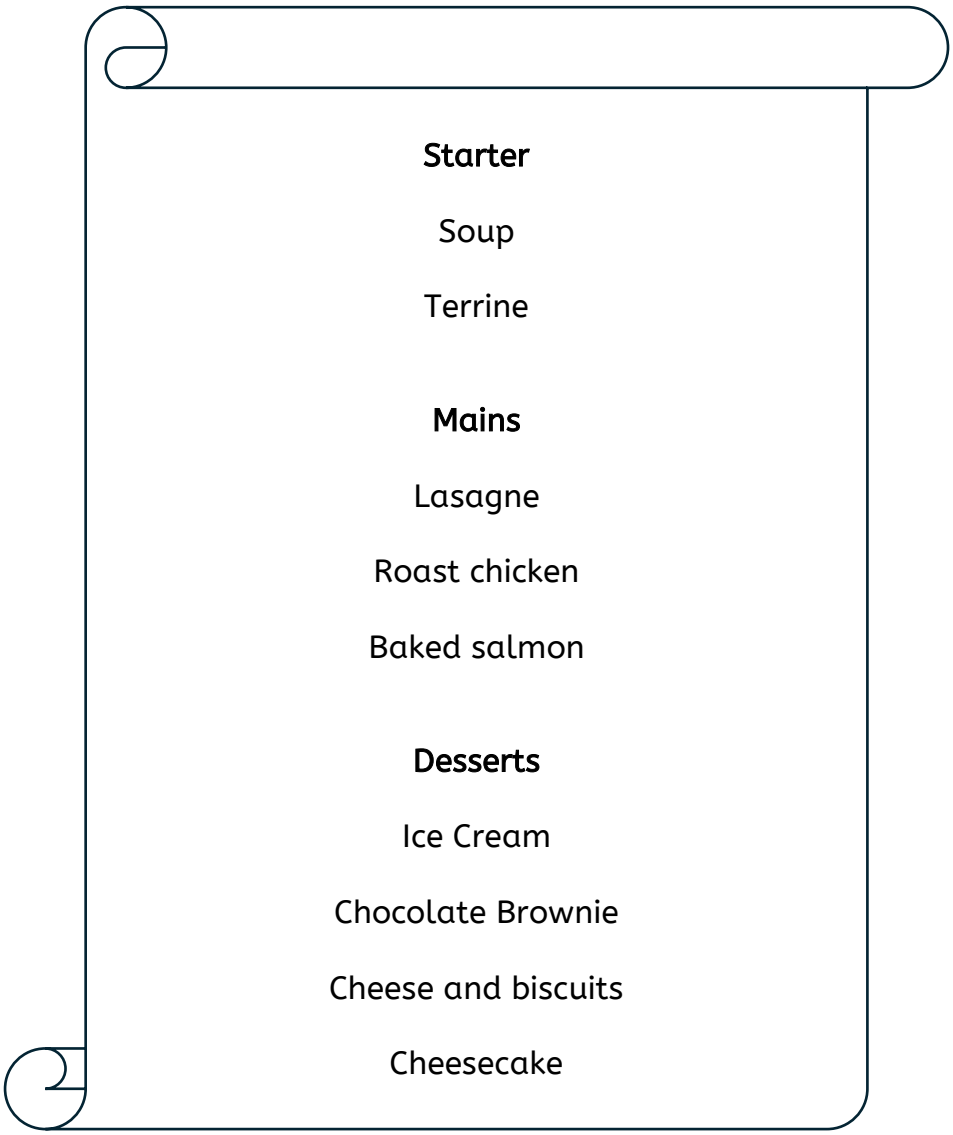
Answer = ...

2

Question 23

Here is the menu from a restaurant.

How many different combinations of starter, main and dessert are there?



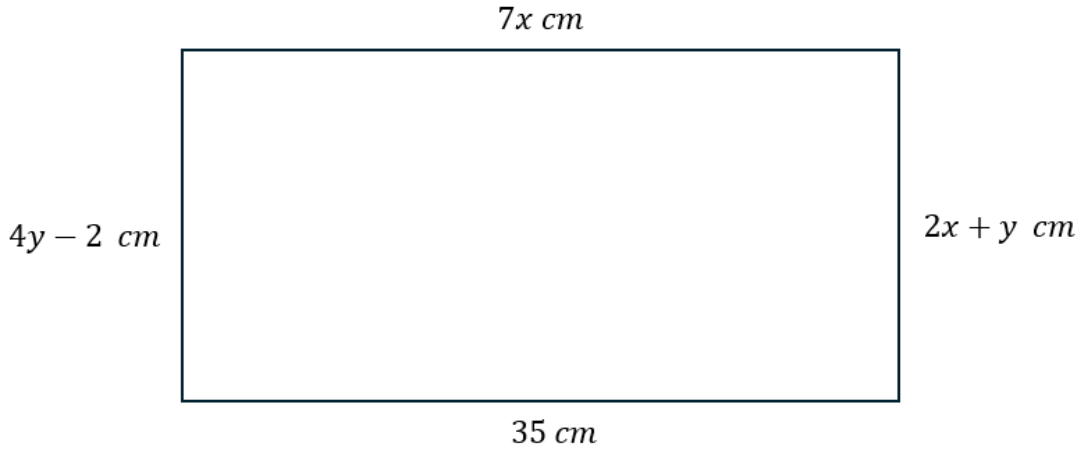
Answer = ...

2

Question 24

The diagram shows a rectangle.

Not drawn accurately



Work out the perimeter of the rectangle.

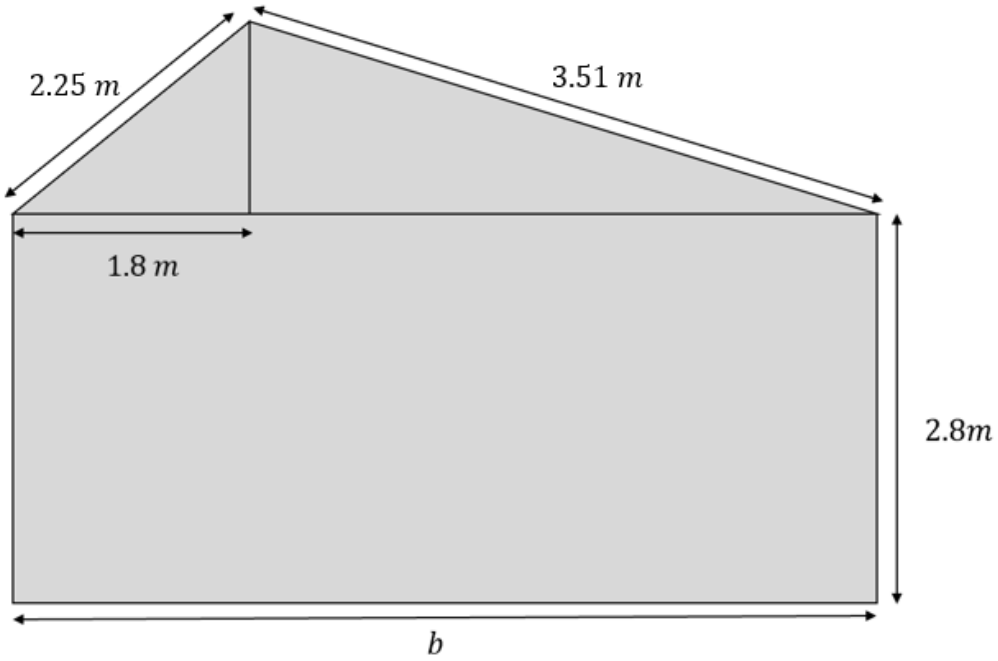
Answer = ... cm

4

Question 25

The image below shows the side elevation of a house.

Not drawn accurately



Find the length of the base, b.

Answer = ... m

4

END OF ASSESSMENT

This is the end of the assessment.
There are no questions printed on this page.