

MATHS COMPETENCY - SAMPLE

The test below is one example of a Maths Competency Test and it is intended for use in post primary schools to determine the mathematical skills set of their first-year students and to inform the delivery and assessment of the first year mathematics programme. It is not a standardised test nor does it produce results that can be referenced against national norms. It does however enable schools to determine those elements of the curriculum where students need additional support as well as areas of particular strength. The outcomes of the test should, therefore, be carefully analysed to pinpoint precisely those areas of the curriculum requiring particular attention during first year. The first year programme should not only address the areas of weakness but should also seek to exploit any evident strengths. Assessments conducted throughout first year should take due regard of the outcomes of this analysis and questions either similar to those on the test or designed to test for the expected development within the selected curricular strands should feature where appropriate.

Over time, each school should create a series of these tests for themselves. The tests should reflect the school's context, the knowledge and skills they would expect their first years to have at the point of entry and acquire during first year and should inform the school's self-evaluation agenda. Clear objectives should be developed prior to designing the test. Clarity in relation to the objectives of the test will not only inform the content of the test itself but will direct the analysis of the outcomes of the test and the use to which the analysis is put.

When correcting the test remember you need to aggregate the marks scored on each question and express it as a percentage of the total possible marks for that question -you may also choose to record the individual student marks. A very basic tool, which is available on the website, has been created to assist you in analysing the outcomes of the test. Additional feature will be added to this tool over the coming weeks and the upgraded version will be published on the website as soon as it becomes available. In the meanwhile if you have particular questions, please feel free to contact us.

School:	Class:
Date Administered:	Administered by:
Date corrected:	Date Analysed:

Student Name:
D.O.B.: Age:

Question 1

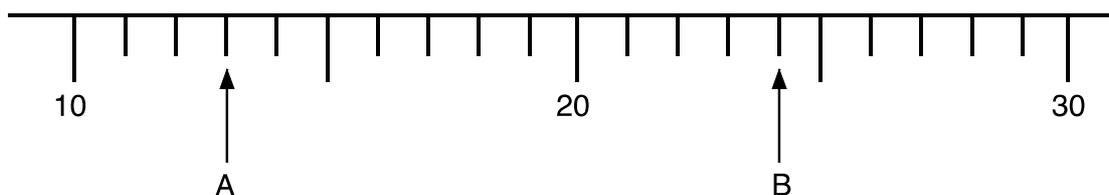
(i) Calculate: (a) $23 + 14$ **Answer (a)** _____

(b) $16 + 15 - 11$ **Answer (b)** _____

(c) $31 - 20 + 13$ **Answer (c)** _____

(3 x 1 mark)

(ii) Write down the numbers indicated by the arrows on the number line below



A = _____ **B =** _____ **(2 x 1 mark)**

(iii) Take 35 from 53 **Answer:** _____

(iv) Add 17 to 25 **Answer:** _____

(v) Find a number that is **3 times smaller** than 36

Answer: _____ **(3 x 1 mark)**

Question 2

(i) Calculate

(a) 14×2

Answer (a) _____

(b) $28 \div 4$

Answer (b) _____

(c) $(32 - 2) \times (6 + 2)$

Answer (c) _____

(d) $4 + 2 \times 5$

Answer (d) _____

(4 x 1 mark)

(ii) (a) Calculate $24.5 + 222.35$

Answer (a) _____

(b) Multiply 12.5 by 3

Answer (b) _____

(c) Increase 2.35 by 1.12

Answer (c) _____

(3 x 1 mark)

Question 3

Use brackets to make each of the following statements true

(a) $8 \times 5 + 3 - 3 = 61$

(b) $5 - 3 \times 4 + 7 = 22$

Answer (a) _____

Answer (b) _____

(2 x 1 mark)

Question 4

39	24	13
15	81	28
40	11	5

(i) From the numbers in the grid above, write down

(a) Two numbers that add to give 64

Answer: _____

(b) Two numbers that differ by 15

Answer: _____

(c) A perfect square (a square number)

Answer: _____

(d) A prime number

Answer: _____

(e) A number that is a multiple of the numbers of squares in the grid

Answer: _____ (5 x 1 mark)

(ii) Find the smallest number that can be formed by multiplying two (different) numbers in the grid.

Answer: _____ (1 mark)

Question 5

(i) Calculate:

(a) $\frac{1}{2} + \frac{3}{5}$	Answer (a)
(b) $\frac{2}{7} - \frac{3}{8}$	Answer (b)
(c) $\frac{4}{5} \div \frac{1}{6}$	Answer (c)
(d) $10 \div 2 + 15 \div 3$	Answer (d)

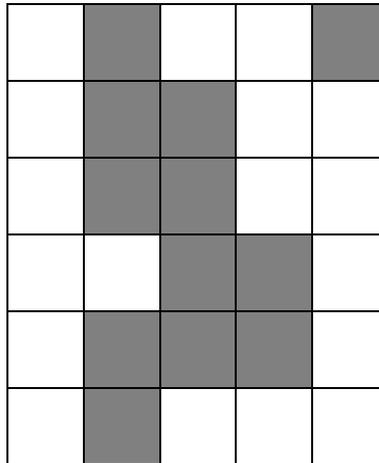
(4 x 1 mark)

(ii) Find two-thirds of 21

Answer: _____

(1 mark)

Question 6



(a) What fraction of the shape above is shaded?

Answer: _____

(b) What **percentage** of the shape above is **not** shaded?

Answer: _____

(c) Shade in a sufficient number of squares so that 70% of the shape above is shaded.

Answer: _____

(3 x 1 mark)

Question 7

The display on the door of a factory's cold room is shown below:

Temperature (Outer Room): 2°C	Temperature (Freezer): -12°C
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- (a) How much warmer is the outer room than the freezer?

Answer: _____

- (b) Apples are to be stored in the **Outer Room**, but will be damaged at temperatures below 8°C . By how much should the temperature be raised if the apples are to be stored safely?

Answer: _____

- (c) If the temperature of the **Freezer** has to be reduced by 11°C in order to store a quantity of fish. What will be the new reading on the display?

Answer: _____

(3 x 1 mark)

Question 8

A shopkeeper takes delivery of 30 boxes of sweets; each box contains 50 sweets. He sells them in bags containing 12 sweets.

(a) How many bags can he make?

(1 mark)

(b) How much should each bag cost if he is to take in €25.00 on the sale of the sweets?

(1 mark)

Question 9

At a cake sale in school, 100 cakes were sold. One of the classes created a table to represent the outcome of the sale. The partially completed table is shown below:

Cake Sales	
Fruit Cakes	
Fairy Cakes	
Lemon Cakes	
Chocolate Cakes	
Carrot Cakes	
Marble Cakes	

If 16 fruit cakes were sold

(a) How many lemon cakes were sold?

Answer (a)

(b) If each Chocolate Cake sold for € 6.50, how much did the sale of Chocolate Cakes raise?

Answer (b)

(2 x 1 mark)

(c) If there were twice as many Carrot Cakes as Lemon Cakes sold:

(i) Find the number of Carrot Cakes sold

Answer: _____

(ii) Complete the Cake Sales table

(2 x 1 mark)

Question 10

Impossible	Certain	Evens	Likely	Unlikely
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Choose a word from the list above to describe the probability of the following:

(a) A head in one toss of a fair coin

Answer: _____

(b) Everyone in our class has blue eyes

Answer: _____

(c) A total of 13 shows when two fair six-sided dice are thrown

Answer: _____

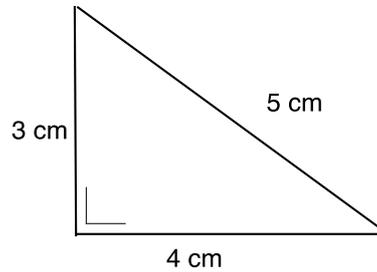
(d) A head **or** tail occurs in one toss of a fair coin

Answer: _____

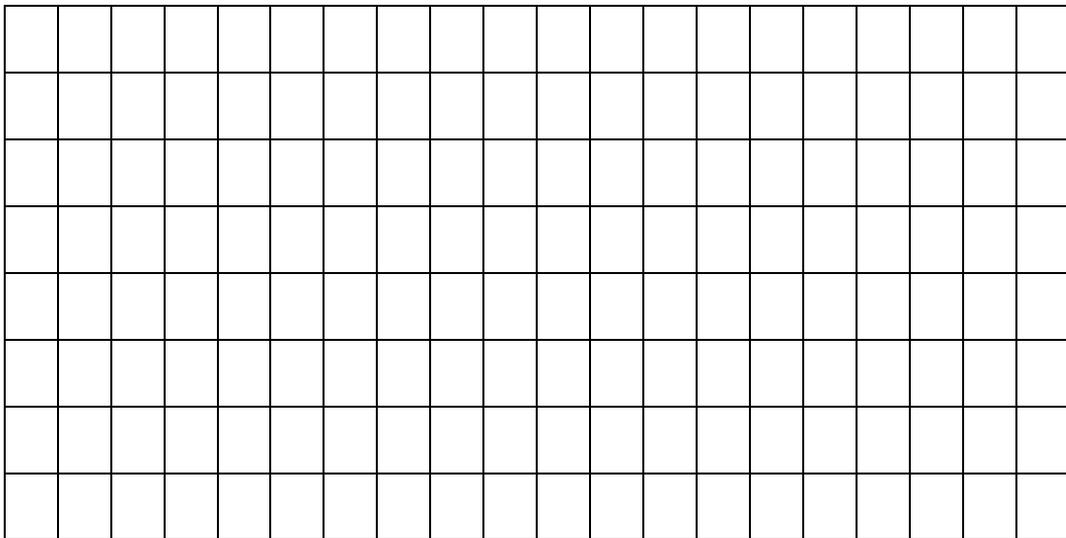
(4 x 1 mark)

Question 11

A right-angled triangle has sides of length 3 cm, 4 cm and 5 cm as shown



- (i) On the grid below show how two of these triangles can be combined to give a rectangle



(1 mark)

- (ii) Find:

- (a) The area of the rectangle

Answer (a)

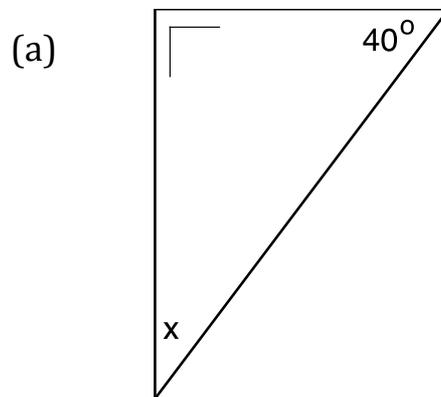
(1 mark)

(b) The perimeter of the rectangle

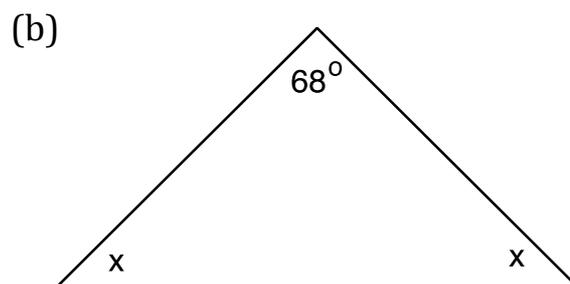
Answer (b)

(1 mark)

(iii) Calculate the size of the angle marked 'x' in the triangles below.
(The diagrams are not to scale).



Answer (a) _____

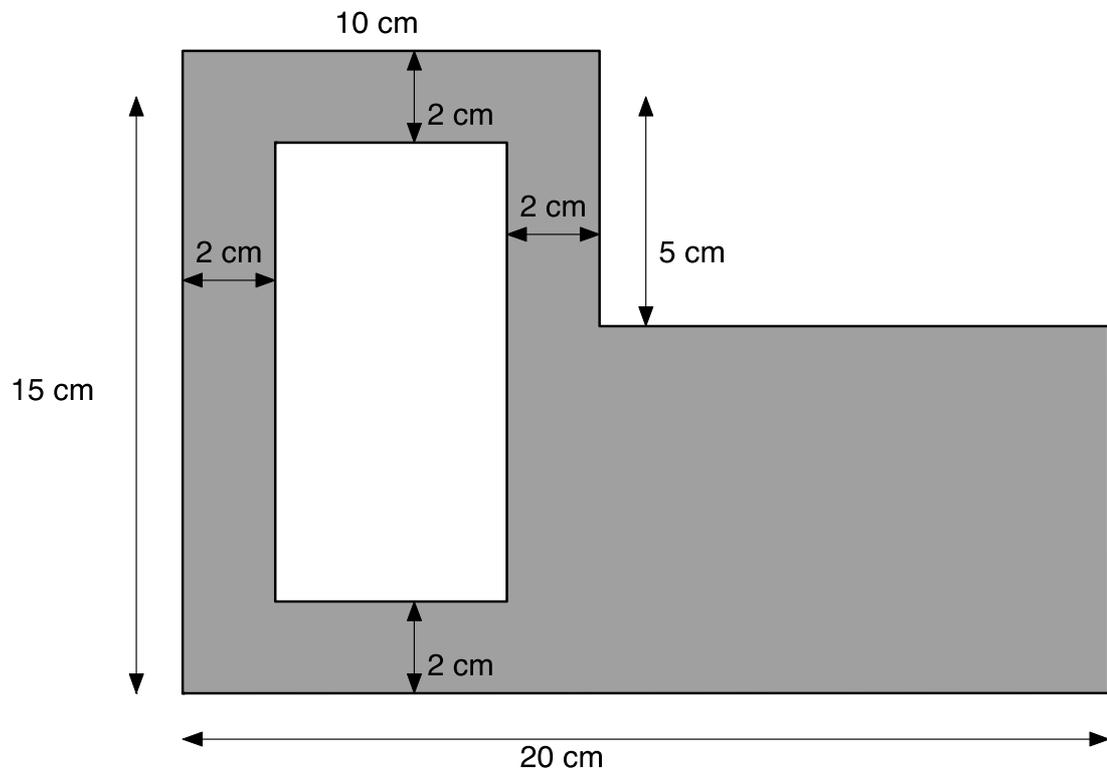


Answer (b) _____

(2 x 1 mark)

Question 12

Find the area of the shaded portion of the shape shown below:

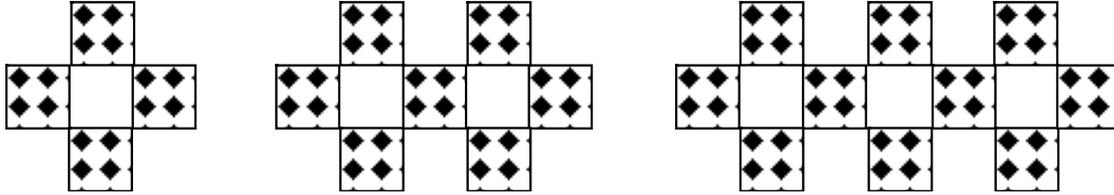


Answer:

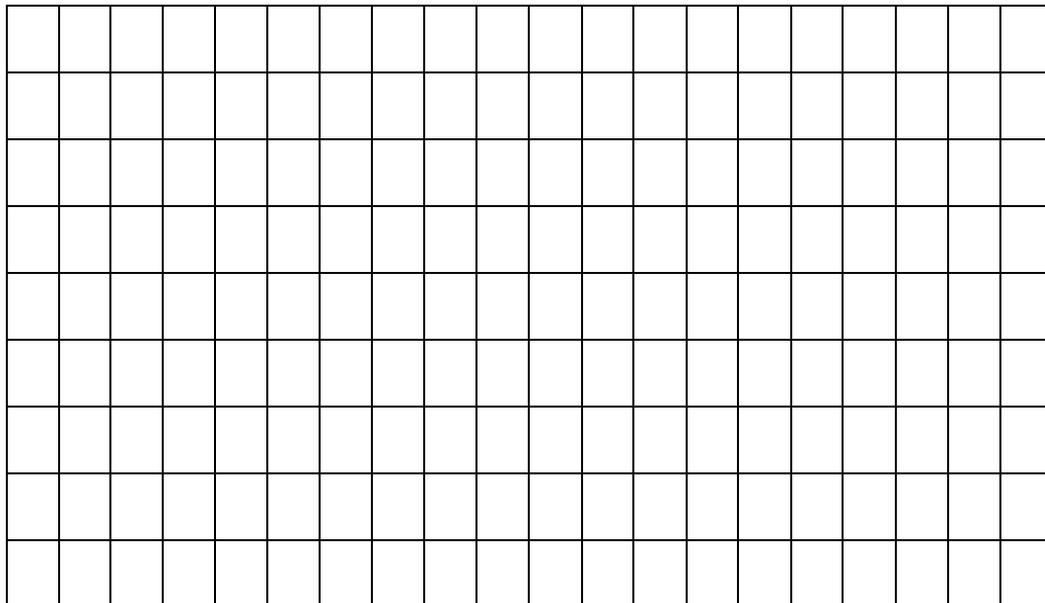
(3 marks)

Question 13

Below are some patterns made using two types of square tile



- (i) In the space provided draw the next pattern in the sequence



(1 mark)

- (ii) How many **(a)** white tiles and **(b)** black tiles will be needed for the sixth pattern?

Answer (a) _____ Answer (b) _____

(2 x 1 mark)

(iii) How many white tiles will they need to make the 13th pattern in the sequence?

Answer: _____

(1 mark)

(iv) Joan and Paula think that 40 black tiles will be needed to make the 13th pattern in the sequence.

Are they correct?

Answer: _____

Give a reason for your answer

(1 mark)