



11+ Entrance Examination

Mathematics

Name:

Time: 45 Minutes

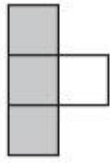
Instructions:

- You **may not** use a calculator in this test.
- There are 15 questions on this test - try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper.
- Marks may be awarded for working.
- Check your work carefully.

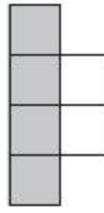
TOTAL: out of 60 marks

Q1.

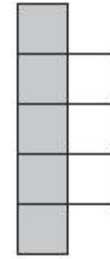
Here is a sequence of patterns made with grey square tiles and white square tiles.



pattern number
1



pattern number
2



pattern number
3

(a) In the space below, draw pattern number 4

(1)

(b) Find the total number of tiles in pattern number 20

.....

(2)

(c) One of the shapes in the pattern is made from 102 squares.

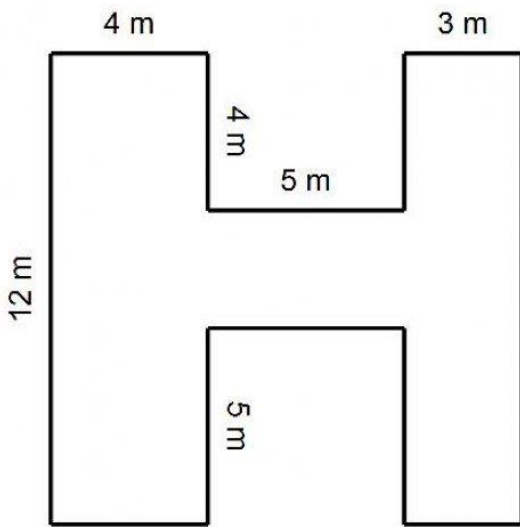
What is the pattern number of this shape?

.....

(2)

(Total for question is 5 marks)

Q2.



Work out the area of the shape.

..... cm²

(Total for question is 3 marks)

Q3.

Tony needs to buy chocolate bars for all the children in Year 7.

Each of the 130 children get one chocolate bar.

There are 8 chocolate bars in each packet.

Work out the least number of packets of chocolate bars that Tony needs to buy.




.....


(Total for question = 3 marks)

Q4.

Ajay owns a cafe.

The pictogram shows information about the number of each type of fruit he has in the cafe.

Apples	
Oranges	
Bananas	

Key	
represents 4 pieces of fruit	

It takes 7 oranges to make 500 ml of orange juice.

Ajay has to make 1 ½ litres of orange juice.

Has Ajay enough oranges?

You must show all your working.

(Total for question = 3 marks)

Q5.

Write down three different multiples of 4 that add up to 40

.....

(Total for question = 2 marks)

Q6.

(a) Work out $16 - 6 \times 2$

(1)

(b) Write 0.7 as a percentage.

(1)

(c) Write $\frac{3}{5}$ as a decimal.

(1)

(d) Find 15% of 120

(2)

(e) Fill in the missing signs +, -, \times , or \div to make the following calculation correct:

$$20 \dots\dots\dots 10 \dots\dots\dots 5 = 18$$

(2)

(f) Put a pair of brackets around one step of the calculation to make the answer as small as possible.

$$16 + 32 \div 8 \div 2 - 1$$

(2)

(Total for question = 9 marks)

Q7.

(a) Write down the 20th odd number.

(1)

The sum of two consecutive odd numbers is 48

(b) Find the smaller of these two odd numbers.

(2)

Here are the first five terms of a number sequence.

5 8 11 14 17

(c) Is 42 a number in this sequence?

Show how you get your answer.

(2)

(d) The rule to get the next term in a sequence is:

“add the previous two terms together”

The fifth term is 11 and the sixth term is 18.

What are the first two terms of the sequence?

(3)

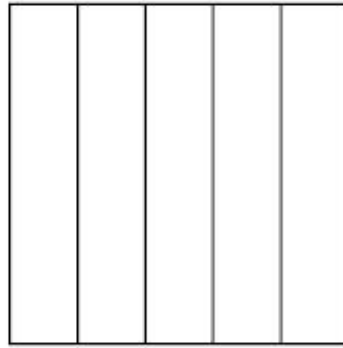
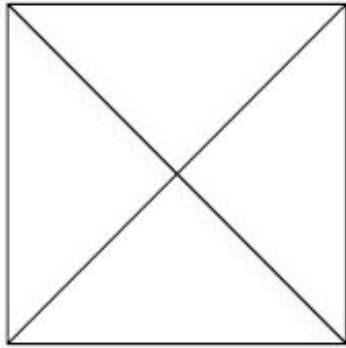
(Total for question = 8 marks)

Q8.

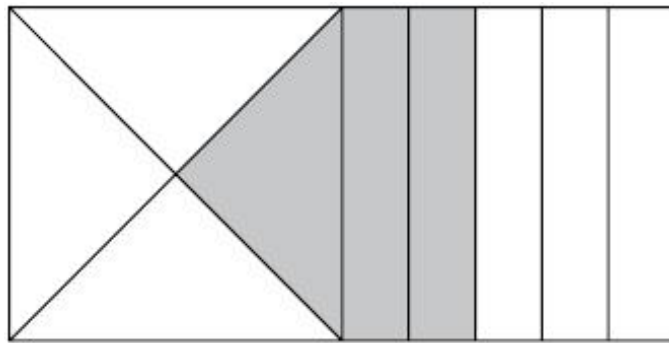
Here are two identical squares.

The first square is divided into four equal parts.

The second square is divided into five equal parts.



The two squares are joined together as shown to make a rectangle.



What fraction of the rectangle is shaded?

(Total for question = 3 marks)

Q9.

(a) Solve $3x + 7 = 25$

$x = \dots\dots\dots$

(2)

(b) $f = 6$

$g = 5$

Work out the value of $3f - 2g$

$\dots\dots\dots$

(2)

(Total for question = 4 marks)

Q10.

Use each of the numbers below to fill in the multiplication:

- 1 2 3 7 8

		<input type="text"/>	4	<input type="text"/>	<input type="text"/>	
				9	<input type="text"/>	
		<hr/>				
		6	9	7	4	
	3	<input type="text"/>	3	8	3	0
	<hr/>					
	3	2	0	8	0	4

(Total for question = 3 marks)

Q11.

Here are four cards.

There is a number on each card.

4

5

2

1

(a) Write down the largest 4-digit even number that can be made using each card only once.

.....

(2)

(b) Write down all the 2-digit numbers that can be made using these cards.

(2)

(Total for question is 4 marks)

Q12.

Fill in the missing numbers to make these calculations correct:

$$2.4 \div 0.8 = 24 \div \boxed{}$$

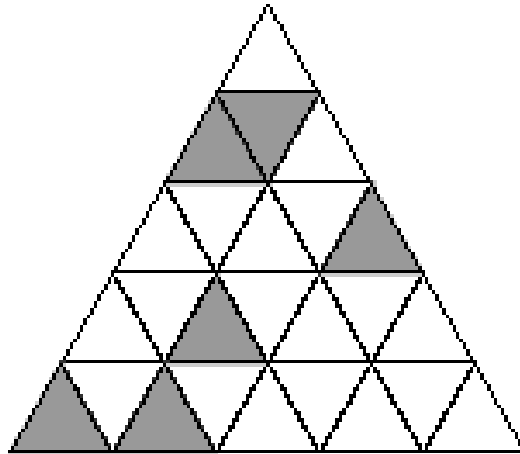
$$3.64 \div 0.2 = 364 \div \boxed{}$$

(Total for question is 2 marks)

Q13.

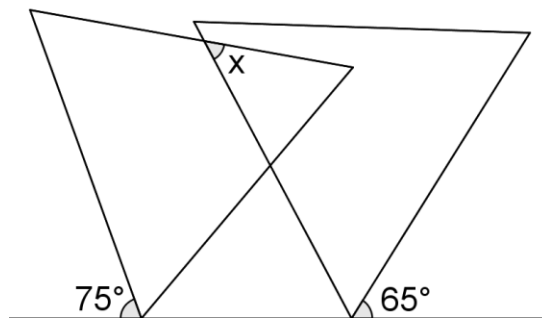
The figure shows an equilateral triangle divided into small equilateral triangles, all equal.

What is the lowest number of small triangles which must now be shaded to produce a picture which has a line of symmetry?



(Total for question is 3 marks)

Q14.



The diagram shows two equilateral triangles.

What is the size of angle x?

(Total for question is 4 marks)

Q15.

A country has decided to have just two different coins.

It has been suggested that these should be 3z and 5z coins.



The shops think this is a good idea since most totals can be made.



For example, a total of 11z can be made using $2 \times 3z + 5z$.

(a) Show how 31z could be made.

(1)

(b) Find the largest total that cannot be made.

Explain your answer.

(3)

(Total for question is 4 marks)

END OF TEST – NOW GO BACK AND CHECK YOUR ANSWERS



11+ Examination Sample Solutions

Question	Solution	Notes
1a	6 grey, 4 white squares	
1b	42	$2 \times 20 + 2$
1c	50	$(102 - 2) \div 2$
2	$99m^2$	$12 \times 4 + 5 \times 3 + 3 \times 12$
3	17	$130 \div 8 = 16 \text{ rem } 2$
4	YES – she has 22 oranges	1 ½ litres needs $3 \times 7 = 21$
5	4, 16, 20 or 8, 12, 20	
6a	4	$16 - 12$
6b	70%	
6c	0.6	
6d	18	
6e	18	$20 - 10 \div 5$
6f	$16 + 32 \div 8 \div (2 - 1)$	20
7a	39	$20 \times 2 - 1$
7b	23	$23 + 25 = 48$
7c	No	
7d	1, 3	1, 3, 4, 7, 11, 18 ...
8	$\frac{13}{20}$	$\frac{1}{4} + \frac{2}{5}$
9a	$X = 6$	
9b	8	$3 \times 6 - 2 \times 5$
10	3487×92	
11a	5412	
11b	12 21 41 51 14 24 42 52 15 25 45 54	
12	$24 \div 8$ and $364 \div 20$	
13	3	
14	40°	Mark known angles on triangle – in an equilateral all angles are 60°
15a	$7 \times (3z) + 2 \times (5z)$	
15b	7z	Not a multiple of either 3z or 5z