BENENDEN

**Lower School Entrance 2019**

**MATHEMATICS**

**14+**

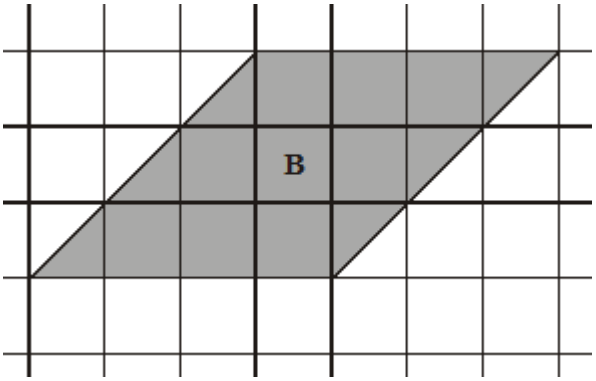
**1 Hour**

| | |
|---|---|
| **Name:** | …… |
| **School:** | …… |
| **Date:** | …… |

***Equipment required: pen, pencil, ruler, protractor, compasses, eraser.***
***Instructions to Candidates:***

1 Attempt all questions. Do not worry if you don't manage to do them all
2 Calculators may be not used
3 Show ALL working
4 Check your answers for accuracy
5 Total points for the test: 76

1. Look at the shaded shape on the square grid:




For each statement below, tick (√) to show whether it is True or False:

| | True | False |
|---|---|---|
| The shaded shape is a quadrilateral | ------- | ------- |
| The shaded shape has four equal sides | ------- | ------- |
| The shaded shape has four equal angles | ------- | ------- |
| The shaded shape has two pairs of parallel sides | ------- | ------- |

Name the shape: _____

(3)

2. Write down the first five multiples of 12

_____

(2)

3. Calculate:

a) 3.19 x 100 = _____

b) 250.8 x 1000 = _____

c) 91.6 ÷ 10 = _____

d) 0.527 ÷ 100 = _____

(4)

4. a) Find $\frac{3}{8}$ of 560 ml

_____

(2)

b) Calculate:

35% of 90

_____

(2)

c) Decrease £800 by 15%

_____

(2)

5. When Harry plays cards, the probability of his winning is 0.2 and the probability of a draw is 0.5.

   a) What is the probability of his losing?

   _____

   b) If he plays 110 games, how many times can he expect to win?

   _____

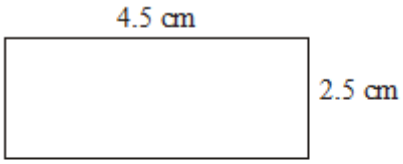
   (3)

6. A coffee mug costs £4.98.

   What would you pay for 16 mugs?

   _____

   (2)

7. 


   a) Find the area of this shape

   _____

   b) Find its perimeter

   _____

   (4)

8. The table shows the lengths of some rivers, correct to the nearest km.

a) Fill in the spaces, writing the lengths correct to the nearest 100 km and to the nearest 10 km, as indicated:

| River | Length, to the nearest km | Length, to the nearest 100 km | Length, to the nearest 10 km |
|---|---|---|---|
| Severn | 354 | | |
| Thames | 346 | | |
| Trent | 297 | | |
| Wye | 215 | | |
| Dee | 113 | | |

.

(4)

b) Another river, not in this list, has a length of 200 km to the nearest 100 km and a length of 150 km to the nearest 10 km.

Write down one possible length of this river, to the nearest km

_____

(1)

c) Two more rivers have different lengths to the nearest km.

They both have a length of 250 km to the nearest 10 km, but their lengths to the nearest 100 km are different.

Write down a possible length for each of these two rivers, to the nearest km

_____ and _____

(2)

9. Solve the following equations:

a) $5m - 7 = 33$

_____

(2)

b) $4(3n + 10) - 25 = 51$

_____

(3)

10. Calculate:

a) $2\frac{7}{8} - \frac{3}{5}$

_____

(3)

b) $\frac{10}{11} \times 6\frac{3}{5}$

_____

(3)

11. Given that $p = -4$, $q = 5$, $r = -2$ and $s = 7$,

calculate the value of the following expressions:

*a)* $4r + 9$

_____

(1)

*b)* $(q - r)(p - s)$

_____

(2)

*c)* $p^2 - 6q$

_____

(2)

12.

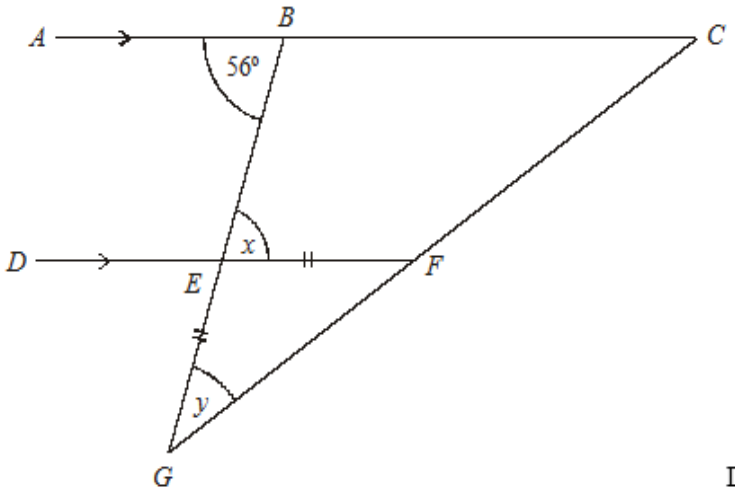



Diagram **NOT** accurately drawn

*BEG* and *CFG* are straight lines.
*ABC* is parallel to *DEF*.
Angle *ABE* = 56°
*EF* = *EG*

Calculate the size of *x* and *y*

*x* = _____

*y* = _____

(3)

13.

In this design, the ratio of **grey to black** is **3 : 1**

What **percentage** of the design is **black**?



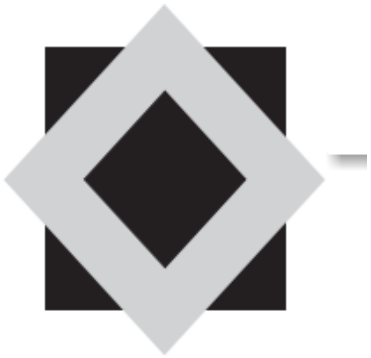
_____

(1)

In this design, **60%** is **grey** and the rest is black.

What is the ratio of **grey to black**?

Write your ratio in its simplest form.



_____

(2)

Another design has a total area of 280 $cm^2$.
The ratio of black to grey is 2 : 5.

Calculate the grey area

_____

(2)

14. Simplify the following expressions:

a) $a \times 8b$

_____

(1)

b) $32c \div 4$

_____

(1)

c) $7d - 14d + d$

_____

(1)

d) $6(3e - f) - 7(2e + 4f)$

_____

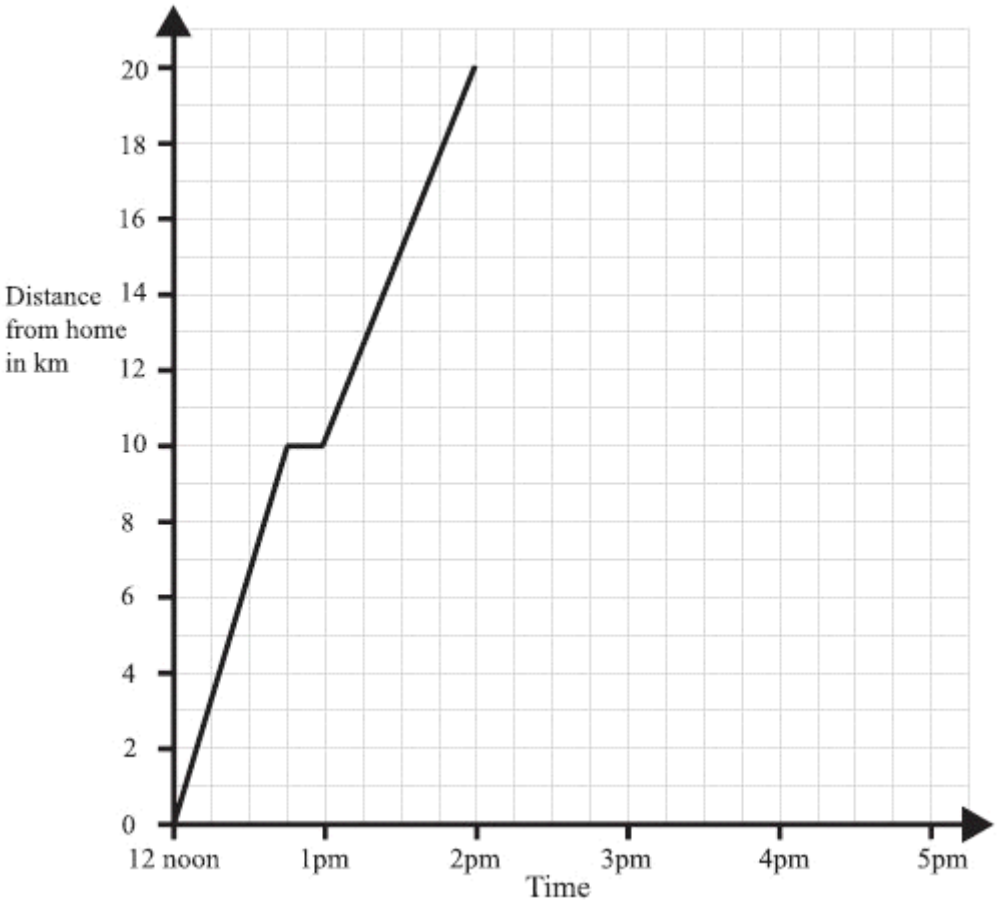
(3)

e) $9g^2 \times 3h^3$

_____

(1)

15. A man left home at 12 noon to go for a cycle ride.
The travel graph represents part of the man's journey.




At 12.45pm the man stopped for a rest.

a) For how many minutes did he rest?

_____

(1)

b) Find his distance from home at 1.30pm.

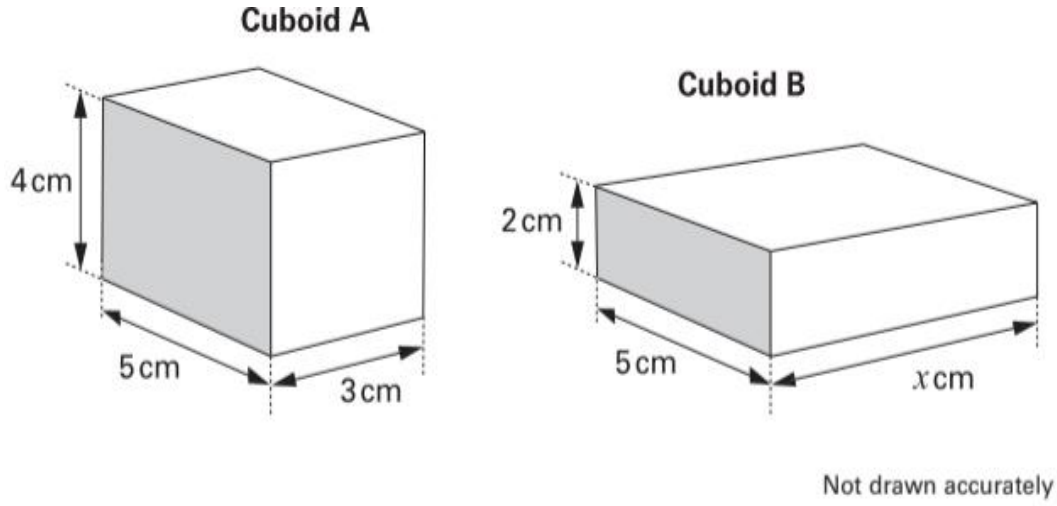
_____

(1)

The man stopped for another rest at 2pm. He rested for one hour. Then he cycled home at a steady speed. It took him 2 hours.

c) Complete the travel graph. (2)

16. The two cuboids below have the same volume.




a) What is the volume of Cuboid A?

_____

(2)

b) Find the value of length *x.*

_____

(2)

17. A box contains cards with one question on each card.
There are four categories of questions.
Each category has some easy and some difficult questions.

The table shows the probability of selecting a card at random from the box.

| Category | Easy | Difficult |
|---|---|---|
| Music | 0.2 | 0.15 |
| Sport | 0.2 | 0.1 |
| History | 0.1 | 0.05 |
| Nature | 0.15 | 0.05 |

a) Jed is going to take a card at random from the box.

i) What is the probability that it will be a History question?

_____

(1)

ii) What is the probability that it will be a difficult question?

_____

(1)

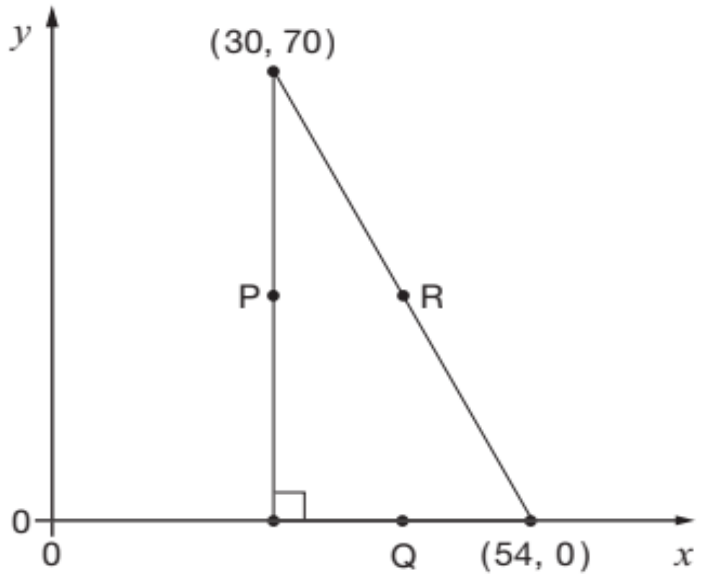
b) There are 40 cards in the box

How many are Music questions?

_____

(1)

18. The diagram shows a right-angle triangle.




Not drawn accurately

P, Q and R are the mid-points of the sides of the triangle.

Work out the co-ordinates of P, Q and R.

P ( ____ , ____ )

Q ( ____ , ____ )

R ( ____ , ____ )

(3)

**END OF TEST. CHECK YOUR ANSWERS CAREFULLY**

**IF YOU STILL HAVE TIME, TRY THESE QUESTIONS:**




1. FLOUR POWER

Alison has a half-full tin of flour. Its mass is 10 kg.
She uses more of the flour until the tin is one-third full. Its mass is now 8 kg.

What is the mass of the tin when it is full?

_____

2. PALINDROMES

A palindrome reads the same backwards as it does forwards eg: ANNA, MADAM and the number 1234321.

How many palindromic numbers are there between 11 and 10 000 ?

_____