BENENDEN

Lower School Entrance 2019

MATHEMATICS

13+

1 Hour

Name:	……..…….……
School:	…….…….……
Date:	……..…….……

Equipment required: pen, pencil, ruler, eraser.

Instructions to Candidates:

1 Attempt all questions. Do not worry if you don't manage to do them all.
2 Calculators may NOT be used.
3 Show ALL working.
4 Check your answers for accuracy.
5 Total points for the test: 100

1. Calculate:

   a) 1.07 x 1000 _____

   b) 6352.7 x 100 _____

   c) 79.4 ÷ 10 _____

   d) 0.609 ÷ 100 _____

(4)

2. Calculate:

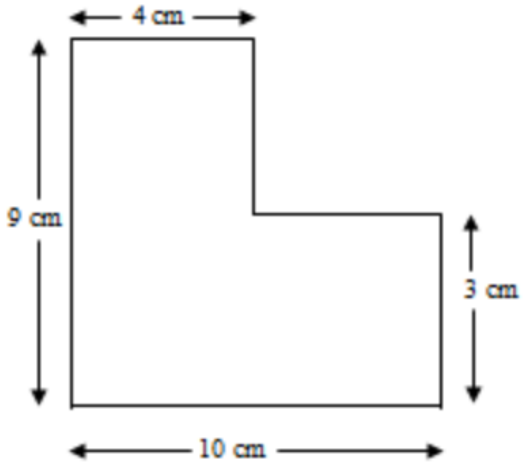
   a) $\frac{4}{7}$ x $2\frac{5}{8}$

_____ (3)

   b) $3\frac{1}{4}$ - $\frac{2}{3}$

_____ (3)

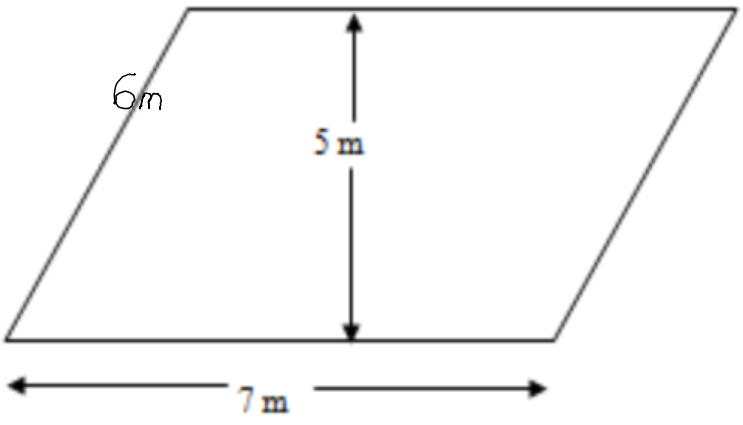
3. For the following shapes, work out
   a) the perimeter
   b) the area



Area = _____

Perimeter = _____

(5)



Area = _____

Perimeter = _____

(5)

4. A pupil recorded the times of 23 people running the 100 metres.
The results are as follows (in seconds)

13.6	14.1	14.3	14.4	14.7	14.7	14.8	14.9
15.0	15.1	15.1	15.1	15.3	15.4	15.5	15.7
15.8	15.8	15.9	16.2	16.2	16.4	16.4	

a) Two people ran the race in 14.7 seconds.
How many were faster than this? _____

(1)

b) What was the range of times?

_____

(2)

c) What was the median time?

_____

(1)

d) What was the modal time?

_____

(1)

5. Increase £480 by 15%.

_____

(3)

6. Elephant pens cost £2.98 each.

How much would 16 cost?

_____

(2)

7. The table shows how much it costs to go to a cinema:

	Before 6pm	After 6pm
Adult	£3.20	£4.90
Child (14 or under)	£2.50	£3.50
Senior citizen (60 or over)	£2.95	£4.90

Mrs. Kali (aged 35), her daughter (aged 12), her son (aged 10) and a friend (aged 65) want to go to the cinema.
They are not sure whether to go before 6pm or after 6pm.
How much will they save if they go before 6pm?
Show all your working.

_____

(4)

8. Write down the next two numbers in the following sequences:

a) 15, 19, 23, _____ , _____

b) 65, 58, 51, _____ , _____

c) 16, 25, 36, _____ , _____

d) -17, -8, 1, _____ , _____

(8)

9. $j = 5$, $k = -1$, $m = -4$ and $n = 3$

Calculate the value of the following expressions:

a) $4n + 7$

_____

(2)

b) $(j - k)(m - n)$

_____

(3)

c) $m^2 + 3j$

_____

(3)

10. Find :

a) $\frac{5}{7}$ of 3710 kg

_____

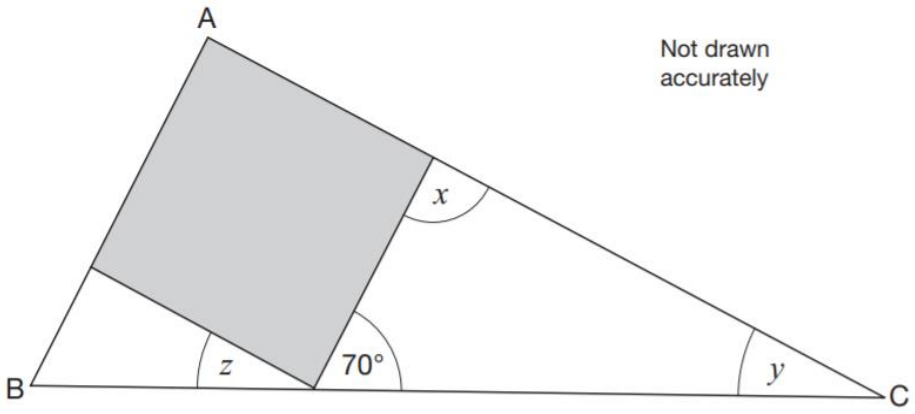
(2)

b) 60% of 38m

_____

(2)

11. In the diagram, the shaded shape is a square, which fits exactly into the triangle.



Work out the sizes of angles *x*, *y*, and *z*.

_____

(3)

12. a) Write 80 as the product of its prime factors

_____

(2)

b) Two numbers have a Lowest Common Multiple of 270 and a Highest Common Factor of 15.

What are the two numbers?

_____

(2)

13. Simplify:

a) 7(3e + f) - 2(2e - 6f)

_____

(3)

b) $4g^2 \times 7gh^3$

_____

(2)

14. The table shows some information about a class of pupils:

	Walk to school	Do **not** walk to school
Boys	2	8
Girls	5	10

a) What percentage of the boys walk to school?

_____

(2)

b) What percentage of the whole class walk to school?

_____

(2)

15. Factorise the following:

a) $15p + 21q$

_____

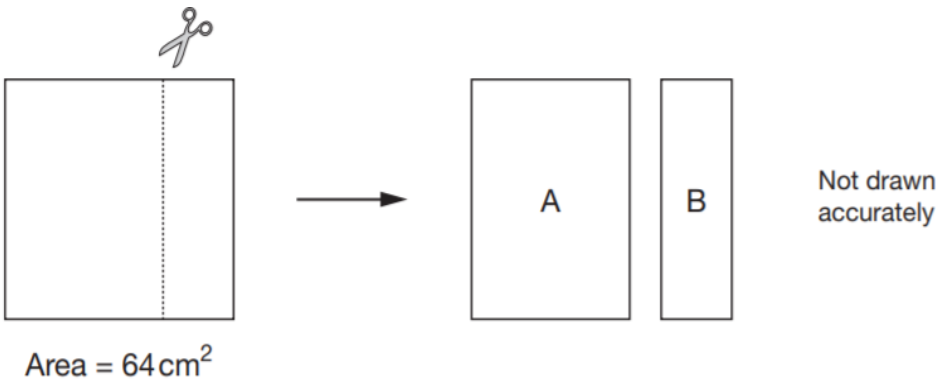
(2)

b) $8d^2 - 24def$

_____

(2)

16. A square is cut into two rectangles, A and B.



The ratio of area A to area B is 3 : 1

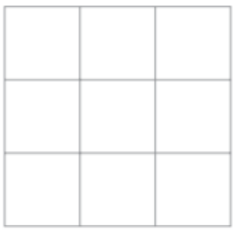
Work out the length and width of each rectangle

Rectangle A: _____ cm by _____ cm

Rectangle B: _____ cm by _____ cm

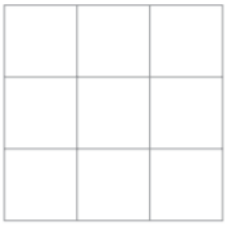
(4)

17. a) Shade squares in the grid so as to form a design with exactly 4 lines of symmetry:



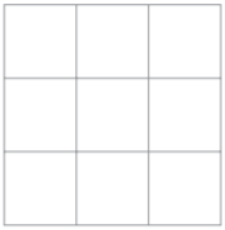
(2)

b) Shade squares in the grid so as to form a design with exactly 2 lines of symmetry:



(2)

c) Shade squares in the grid so as to form a design with rotational symmetry of order 2 :



(2)

18. Solve the following equations:

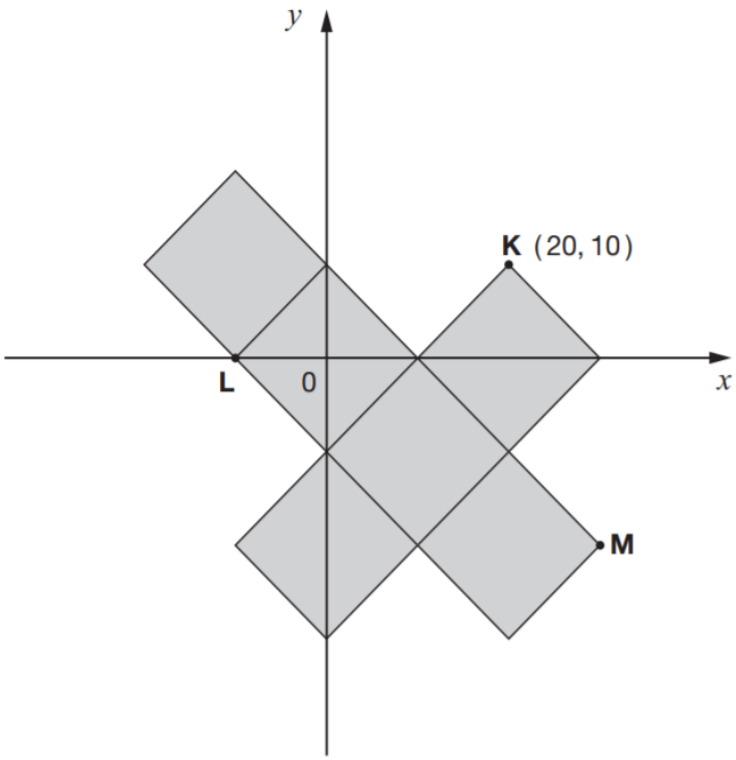
d) $3(2t - 6) = 18$

_____ (3)

b) $5t + 17 = 9 - 3t$

_____ (3)

19. In the diagram, K is the point (20, 10)



Not drawn accurately

The shaded figure above is the net of a cube.

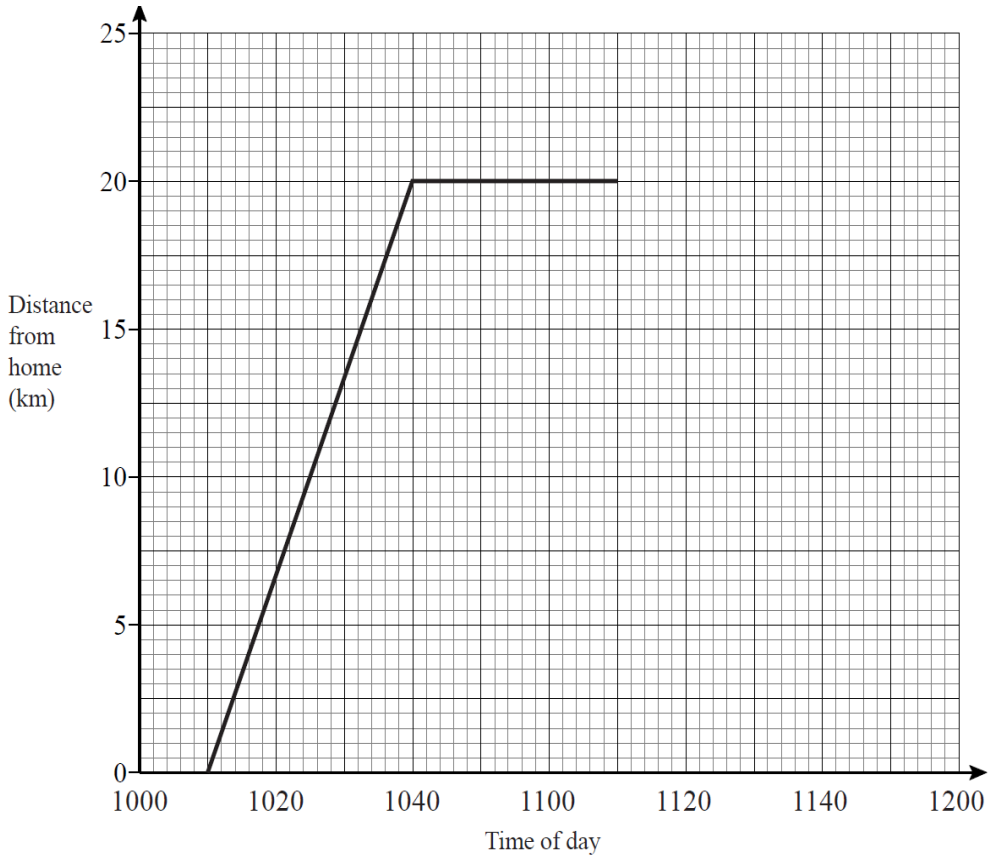
What are the coordinates of points L and M?

L : (_____ , _____)

M : (_____ , _____)

(4)

20.



The graph shows part of a journey made by Karl to collect a parcel from a friend in town.

a) At what time did he leave home? _____

(1)

b) How long did it take him to travel the 20km to his friend's house?

_____

(1)

c) What was the speed of his journey in km/h?

_____

(1)

d) How long was he at his friend's?

_____

(1)

e) His journey home took 10 minutes longer than his outward journey.
Draw his homeward journey onto the graph. (1)

f) How long was he away from home altogether? _____

(1)

END OF TEST

IF YOU HAVE TIME, TRY THE FOLLOWING:

1. Two years ago the ages of the Seven Dwarfs totalled 30 years.
   What will be their total age in three years' time?

_____

2. Lena put some coins on a table, half "heads – up" and half "tails – up".
   She then turned three coins over.
   Now, two-thirds of the coins were "heads – up".
   How many coins were on the table?
   (There are two possible solutions – can you find them both?)

_____