



BENENDEN

Lower School Scholarship 2023

MATHEMATICS

1 hour

Name:
School:
Date:

Equipment required: pen, pencil, ruler, eraser.

Instructions to Candidates:

- Attempt all questions. Do not worry if you don't manage to do them all.
- Calculators may **not** be used.
- Show ALL working.
- Check your answers for accuracy.
- Total marks for test : 100

1. A recipe for 8 servings of noodle pudding uses the following ingredients:

125g butter

250g noodles

4 eggs

125g cottage cheese

80g raisins

140g sugar

a) How much of each ingredient would be needed for a party of 32 people?

_____ butter

_____ noodles

_____ eggs

_____ cottage cheese

_____ raisins

_____ sugar

(3)

b) How much of each ingredient would be needed for a different party, of 4 people?

_____ butter

_____ noodles

_____ eggs

_____ cottage cheese

_____ raisins

_____ sugar

(3)

(Total for question is 6 marks)

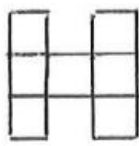
2. Write an algebraic expression for each of the following:

a) The number of pence in m pounds _____ (1)

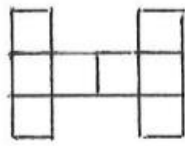
b) The cost of n oranges and three times that number of lemons, when an orange costs 56p and a lemon costs half as much.
_____ (3)

(Total for question is 4 marks)

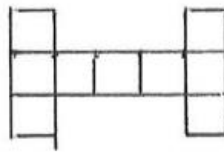
3.



Pattern 1



Pattern 2



Pattern 3

a) Draw the 5th pattern

(2)

b) How many matchsticks would be needed to make the 5th pattern?

_____ (1)

c) Write down the number of squares in the n th pattern.

_____ (2)

d) Write down the number of matchsticks in the n th pattern.

_____ (2)

(Total for question is 7 marks)

4. a) Simplify: $3a(2a + 3b) - 5(a^2 - b)$

_____ (3)

b) $c = 3, d = -7, e = -4, f = 0$

Find the value of

i) $cd^2 - e$

_____ (3)

ii) $def + 4ce^2$

_____ (3)

(Total for question is 9 marks)

5. The area of a rectangle is $21\frac{1}{4}$ cm². The length is $7\frac{1}{2}$ cm.
What is its width?

_____ (Total for question is 4 marks)

6. a) A car costs £7000 and decreases in value by 20% in the first year and 10% in each subsequent year.

What will the value of the car be after three years?

_____ (3)

- b) Siphon travels 555km. It takes him 7.5 hours.

What is his average speed?

_____ (3)

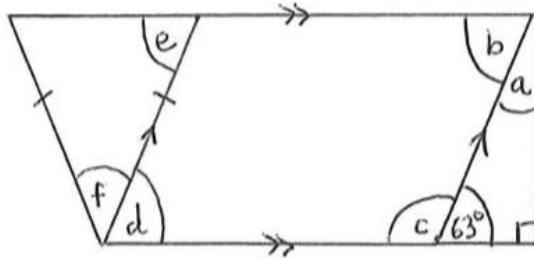
(Total for question is 6 marks)

7. Find the number which fulfils the following:

The sum of the number and 5 less than double the number is 34.

_____ (Total for question is 4 marks)

8. Find the size of the angles in the diagram and state the angle fact you use in your calculation. The diagram is not drawn to scale.



- a = _____ (2)
- b = _____ (2)
- c = _____ (2)
- d = _____ (2)
- e = _____ (2)
- f = _____ (2)

(Total for question is 12 marks)

9. Simplify:

a) $5xy \times 7xyz \times 2z$

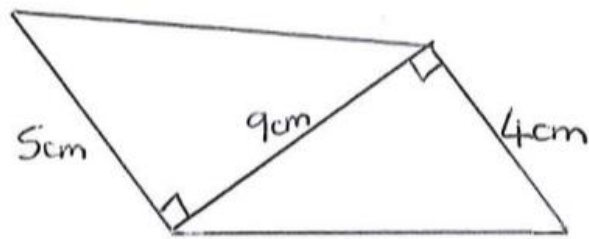
_____ (3)

b) $20a^2 b^4 \div 10a^3 b^5$

_____ (3)

(Total for question is 6 marks)

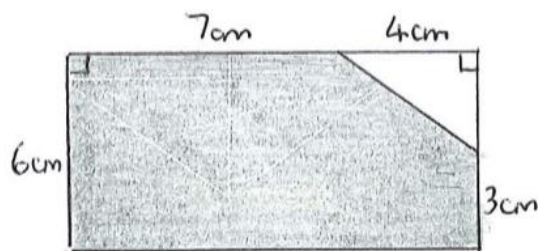
10. a) What is the area of the shape (not drawn to scale) ?



_____ (3)

b) i) Find the total length of **all the lines** in the following diagram.

The diagram is not drawn to scale.



_____ (3)

ii) Find the area of the shaded part

_____ (3)

(Total for question is 9 marks)

11. In Beth's freezer there are
4 choc-ices,
8 lemon whirls
5 strawberry cream ices
7 toffee sundaes

Beth puts her hand into the freezer and takes the first iced dessert that she touches.

- a) What is the probability that it is a fruity ice cream? _____ (2)
b) What is the probability that it is a coffee ice? _____ (2)

Beth replaces ~~the ice she takes and she then~~ takes and eats a toffee sundae.
Her brother Ben chooses and eats a lemon whirl.

Her sister Jess then takes one at random.

- c) What is the probability that it is a choc-ice? _____ (2)
d) What is the probability that it is not a strawberry cream? _____ (2)

(Total for question is 8 marks)

12. Find the value of j

a) $7(j + 3) + 3j + 1 = 2(j - 13)$

_____ (4)

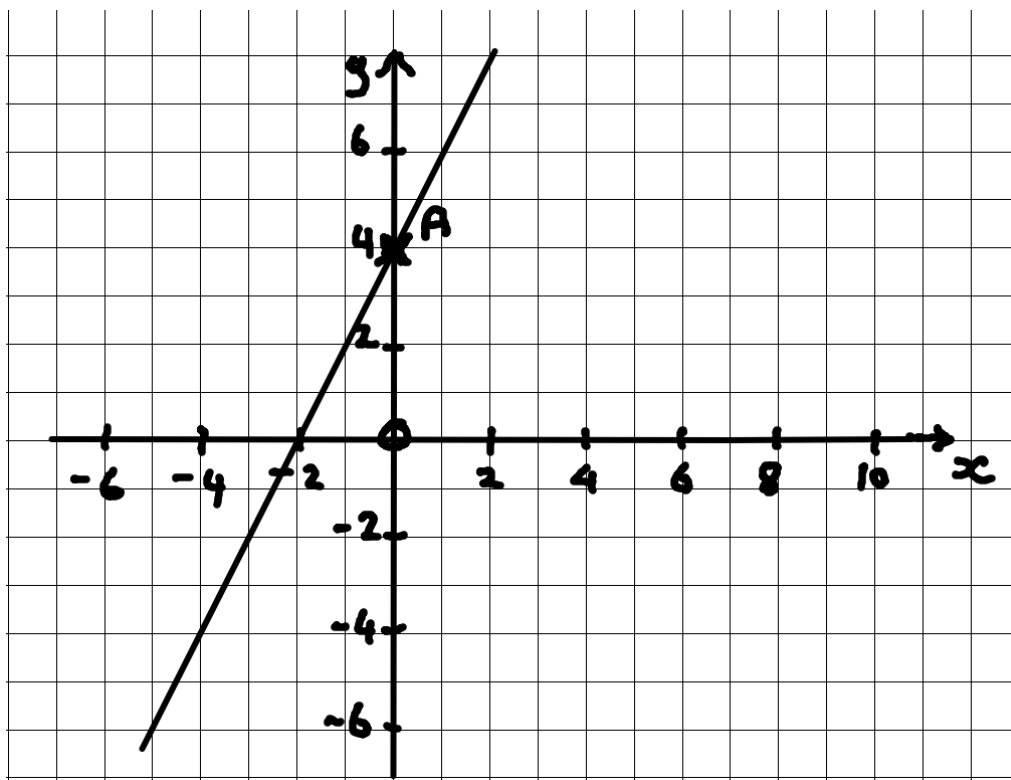
find the value of k

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

_____ (3)

(Total for question is 7 marks)

13.



a) Write down the equation of the straight line shown on the graph:

_____ (2)

b) Draw a line which is perpendicular to the given line, passing through point A (2)

c) Write down the equation of this new line

_____ (2)

(Total for question is 6 marks)

14. The frequency table below shows the number of sweets in each of a selection of bags of sweets.

Number of sweets	Number of bags
10	2
11	4
12	8
13	1

a) What is the modal (mode) number of sweets in a bag? _____ (1)

b) What is the median number in a bag? _____ (2)

c) Calculate the mean number of sweets per bag
_____ (3)

d) What is the range of the number of sweets? _____ (1)

(Total for question is 7 marks)

15. Find the values of m and n if

$$3m - 4n = -26$$

$$2m + 3n = 11$$

$$m = \underline{\hspace{2cm}}$$

$$n = \underline{\hspace{2cm}}$$

(Total for question is 5 marks)

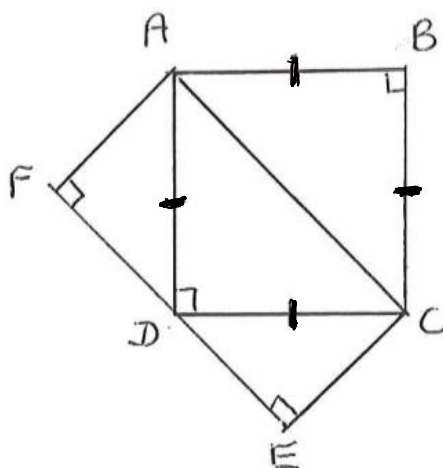
END OF QUESTIONS

Check your work and, if you have time, try the following

- In a Maths class there are 3 boys for every 2 girls.
The average age of the boys is 14 years 2 months.
The average age of the girls is 13 years 4 months

What is the average age of the class?

- What is the ratio of the areas $ABCD : ACDF$?



- A cold water tap fills a bath in t minutes
A hot water tap fills the bath in half the time.
If they both run together they fill the bath in 5 minutes.

Find t

