

SECONDARY SCHOOLS ANNUAL EXAMINATIONS - 2000

Educational Assessment Unit - Education Division

FORM 3

MATHEMATICS (MENTAL)

TIME: 15 minutes

Name _____

Class _____

Mark

- ANSWER ALL QUESTIONS.
- EACH QUESTION CARRIES 1 MARK.
- CALCULATORS, RULERS, PROTRACTORS AND OTHER MATHEMATICAL INSTRUMENTS ARE NOT ALLOWED.
- WRITE DOWN YOUR ANSWER ONLY IN THE SPACE PROVIDED.

**DO NOT
WRITE
IN
THIS
SPACE**

| QUESTION | | ANSWER | | | | | | | | | | | | | | | | |
|--|--|--------|---------|--|--|--|---|---|---|---------|---|--|--|--|---|--|--|--|
| 1. Find: $-7(-3) + 10$ | | | | | | | | | | | | | | | | | | |
| 2. 3.7×10^3 is roughly: A) 4 B) 40 C) 400 D) 4000 | | | | | | | | | | | | | | | | | | |
| 3. The square numbers in the set {4, 8, 12, 16, 20, 24, 28, 32, 36, 40} are: A) 4, 16, 24 B) 4, 16, 36 C) 8, 16, 36 D) 16, 36, 40 | | | | | | | | | | | | | | | | | | |
| 4. One bag contains two Yellow and one Black bead. Another bag contains one Yellow and one White bead. One bead is picked at random from each bag. Complete the possibility space. | <table><tr><td></td><td colspan="3">1st bag</td></tr><tr><td></td><td>Y</td><td>Y</td><td>B</td></tr><tr><td>2nd bag</td><td>Y</td><td></td><td></td></tr><tr><td></td><td>W</td><td></td><td></td></tr></table> | | 1st bag | | | | Y | Y | B | 2nd bag | Y | | | | W | | | |
| | 1st bag | | | | | | | | | | | | | | | | | |
| | Y | Y | B | | | | | | | | | | | | | | | |
| 2nd bag | Y | | | | | | | | | | | | | | | | | |
| | W | | | | | | | | | | | | | | | | | |
| 5. The value of x° is roughly: A) 40° B) 50° C) 130° | | | | | | | | | | | | | | | | | | |
| 6. A is a drawing of toy-house B. B has a scale factor of 3. What is the height of toy-house B. | | | | | | | | | | | | | | | | | | |
| 7. The sum of the exterior angles is: A) 180° B) 360° C) 500° | | | | | | | | | | | | | | | | | | |
| 8. How many squares are there in the diagram? | | | | | | | | | | | | | | | | | | |
| 9. At a steady speed an athlete covers 250 m in 25 seconds. His speed is: A) 250 m/s B) 25 m/s C) 10 m/s D) $\frac{1}{10}$ m/s | | | | | | | | | | | | | | | | | | |
| 10. A drawing book costs 99 cents. How many drawing books can a teacher buy for Lm100? | | | | | | | | | | | | | | | | | | |

SECONDARY SCHOOLS ANNUAL EXAMINATIONS 2000

Educational Assessment Unit - Education Division

FORM 3

MATHEMATICS (Main Paper)

TIME: 1 h 45 min

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Main | Mental | Global Mark |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|------------|--------|-------------|
| Mark | | | | | | | | | | | | | | | | | | |

DO NOT WRITE ABOVE THIS LINE

Name _____

Class _____

CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING MUST BE SHOWN

ANSWER ALL QUESTIONS.

1. Find the values of:
- a) 14^3 = _____ ;
- b) 13^0 = _____ ;
- c) 2^{-3} = _____ ;
- d) $-6 + 8 - 5$ = _____ .

4 marks

2. a) Calculate:

$$\frac{24}{12 - (8 \div 2)}$$

- b) Look at the picture to find the cost of 5 milk shakes.



$$+ = 68c$$



$$+ + + + + = \boxed{}$$

4 marks

3. a) Draw the next two arrangements:



- b) Write down the number of matches used in each arrangement in part (a) of this problem.

3, 5, 7, _____ , _____ .

4 marks

4. a) The table shows the number of books sold by two bookshops between Monday and Wednesday. Write the information shown in the table in **MATRIX FORM**.

| | Monday | Tuesday | Wednesday |
|------------|--------|---------|-----------|
| Bookshop A | 142 | 132 | 358 |
| Bookshop B | 214 | 72 | 200 |

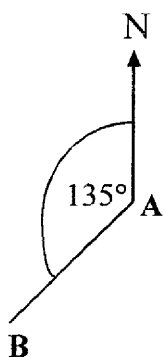
$$= \begin{pmatrix} \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \end{pmatrix}$$

- b) Use the information above to fill in the blanks.

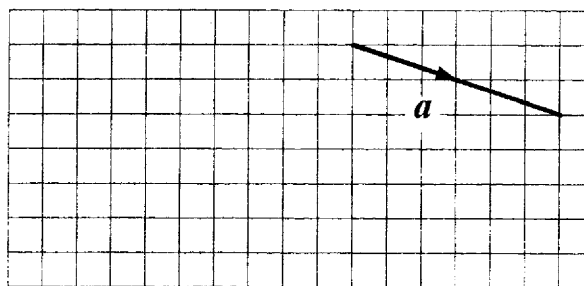
Bookshop _____ sold 72 books on _____.

4 marks

5. a) Write down the three-figure bearing of **B** from **A**.



- b) i) On the grid draw a vector equal to $2a$



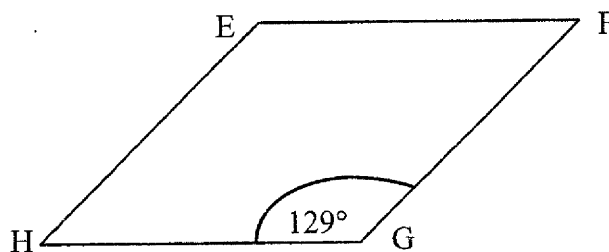
ii) $2a = \begin{pmatrix} \\ \end{pmatrix}$

4 marks

6. Complete:
- a) 3.75 m = _____ cm;
 - b) 2 h 15 min = _____ minutes;
 - c) 8345 g = _____ kg;
 - d) 34.182 = _____ correct to 3 significant figures;
 - e) $\frac{1}{4}$ = _____ %;
 - f) The opposite sides of a parallelogram are equal and _____.

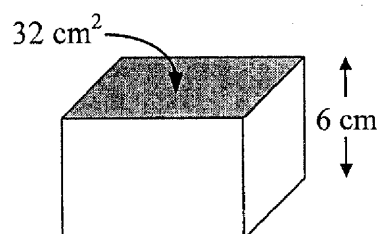
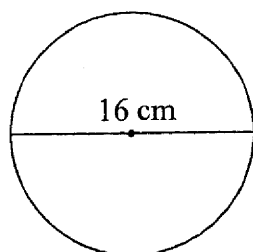
6 marks

7. EFGH is a rhombus.
- Draw the **lines of symmetry**.
 - Write down the value of **angle E**.
 - Find the value of **angle H**.



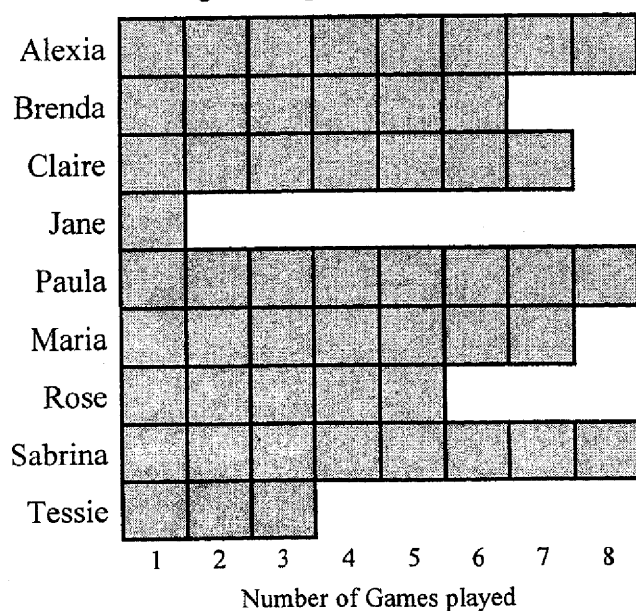
6 marks

8. a) Use your calculator to find the area of the circle correct to 1 decimal place.
(Area of a circle = πr^2)
- b) The **area** of the top face of a cuboid is 32 cm^2 .
Its **height** is 6 cm.
Find the **volume** of the cuboid.



6 marks

9. The bar chart shows the number of times each girl was selected to play for the school volleyball team in the league competition.



- Who played exactly 5 games?

- How many students played all the games?

- Who played less than 50% of the games?

- 2 points are awarded when a team wins.
The school team won all the games.
How many points was the team awarded?

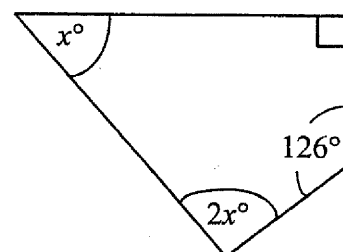
6 marks

10. Glenn is 10 years old and Albert is 15 years old.
They share 20 sweets between them in the ratio of their ages.
How many sweets does each get?

6 marks

11. a) If $x = 3y^2z$ find x when $y = 5$ and $z = 2$. b) Simplify $3a + 2(3 - 4a)$.

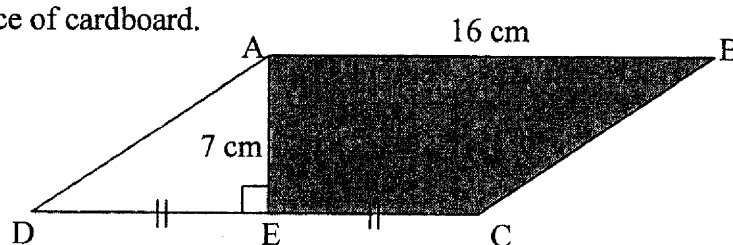
- c) Write down an equation in x° and then find the angle marked x° .



8 marks

12. ABCD is a parallelogram cut out of a piece of cardboard.

- a) Find the area of parallelogram ABCD.



- b) E is the mid-point of DC.
Angle DEA is a right angle.
Find the area of triangle DEA.

- c) Triangle DEA is cut off and thrown away. Find the area of the remaining (shaded) piece of cardboard.

8 marks

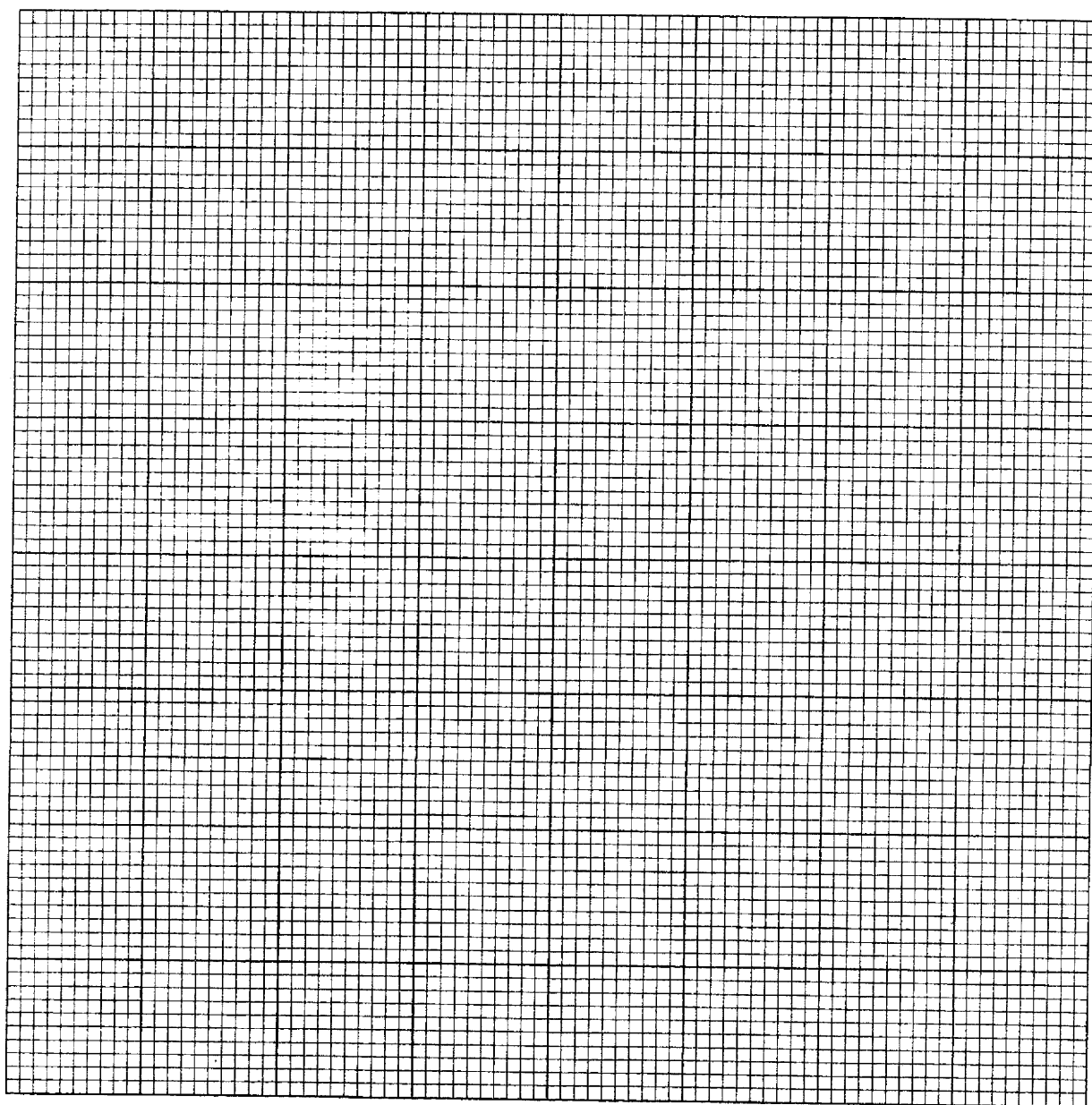
13. a) Complete the table for the values of $y = 2x + 2$.

| | | | |
|--------------|----|---|---|
| $y = 2x + 2$ | | | |
| x | -3 | 0 | 1 |
| y | | | |

- b) Using a scale of 2 cm to represent 1 unit on both axes plot the graph of $y = 2x + 2$.

- c) Use the graph to fill in the blank space:

When $x = -2$, $y =$ _____.



8 marks

14. a) Construct a regular hexagon **ABCDEF** of side 4 cm.

b) Join **BE** and **BF** to form triangle **BEF**.

c) In triangle **BEF** angle **F** is 90° , **FE** = 4 cm and **BE** = 8 cm.
Without using a ruler find the length of **BF** correct to 1 d.p.

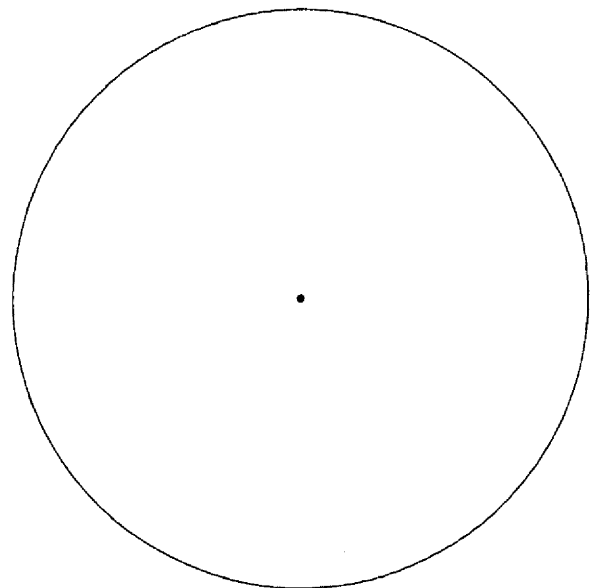
8 marks

15. Michael has a salary of Lm360 per month. The following table shows his salary breakdown for the month of July:

| | |
|----------|-------|
| Food | Lm120 |
| Expenses | Lm108 |
| Leisure | Lm72 |
| Savings | Lm60 |

a) Draw and label a pie chart to represent Michael's Salary Breakdown for July.

b) What percentage of his salary does Michael spend on leisure?



8 marks