Mathematics 401/1

Paper 1

(INTERNAL CANDIDATES)

Time: 2 hours

Marks: 50

No Reading Time

Instructions to candidates

1 Pull out the **Answer Sheet** from the question paper.

2 Write your name, examination number and school/centre on the **Answer Sheet.**

3 There are **two (2)** sections in this question paper, Section **A** and **B**.

4 Answer **all** the questions in both sections on the Answer Sheet provided.

5 In Section A, for each question, **four (4)** suggested answers are given, **A, B, C** and **D**. Choose the correct answer and show it on the Answer Sheet by marking it with a cross **(X)**.

For example, if the answer is D

| A | B | C | ☒ |

6 No paper for rough work is to be provided. Any working should be done on the question paper in the spaces provided.

7 Only the **Answer Sheet** should be handed in.

Information for candidates

Cell phones and calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

SECTION A   [10 marks]

1   Which of the following is an irrational number?

   A   4.12

   B $\sqrt{9}$

   C   2.5

   D $\sqrt{3}$

2   Evaluate $(-5) + (-3)$.

   A -8

   B -2
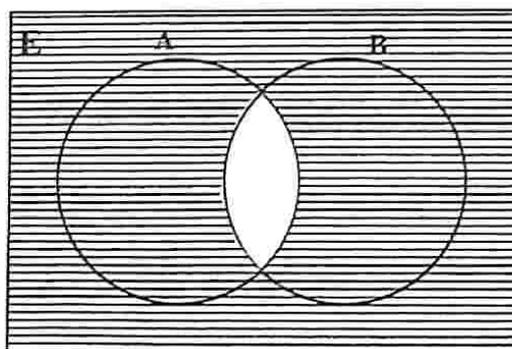
   C   2

   D   8

3   Find the value of $(-4)^2 + 2^3$.

   A   24

   B   14

   C -2

   D -8

4   Using set notation, describe the shaded region shown in the Venn diagram below.

   A $A \cap B$
   B $A' \cap B'$
   C $(A \cup B)'$
   D $(A \cap B)'$

5   Which symbol in the flow chart represents a decision stage?

A   ▭

B   ◇

C   ▱

D   ⬭

6   Round off 37.86 to the nearest tenth.

A   40

B   38

C   37.9

D   37.8

7   Sepo and Thabo shared sweets in the ratio 5:3. If Thabo had 15 sweets, how many sweets did Sepo receive?
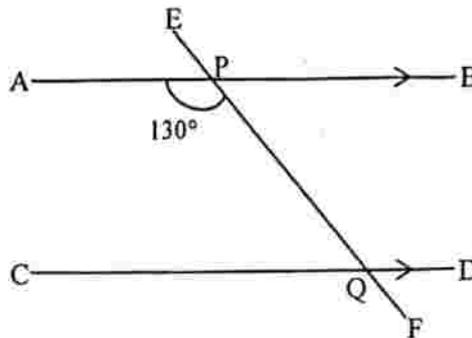
A   9

B   10

C   25

D   75

8   A netball team scored the following goals in seven games: 6, 3, 7, 2, 3, 5 and 10. What was the median score?

A   3
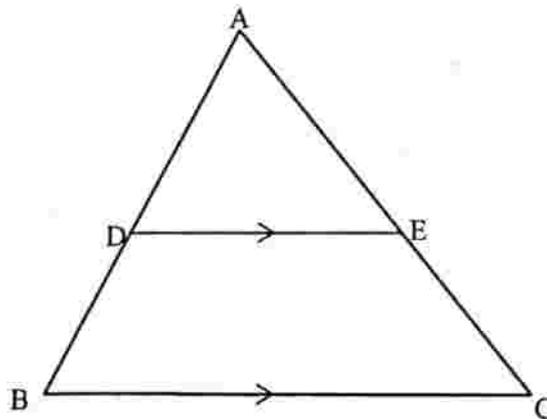
B   5

C   6

D   10

9   In the diagram below, AB is parallel to CD and EF is a transversal.

Angle APQ = 130°.

Find angle PQC.

A   130°

B   60°

C   50°

D   40°

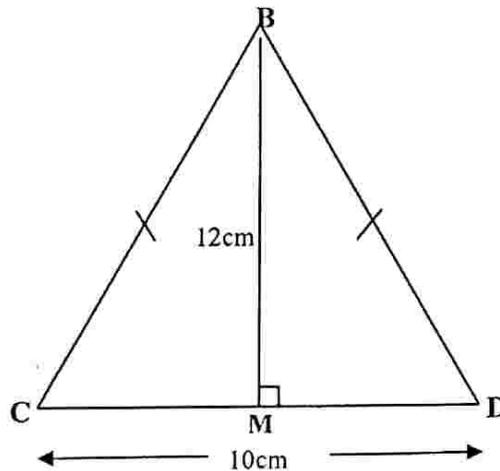10   The diagram below shows a triangle ABC in which DE is parallel to BC.

Name one pair of corresponding sides.

A   AD and DB

B   DB and DE

C   AE and EC

D   AC and AE

[Turn over

SECTION B [40 marks]

11   Factorise completely $12a^2b - 4ab^2$.

12   Solve the equation $3(x - 4) = 5$.

13   In the diagram below, BCD is an isosceles triangle. BM is perpendicular to CD, BC = BD, BM = 12cm and CD = 10cm.

Find the length of BC.
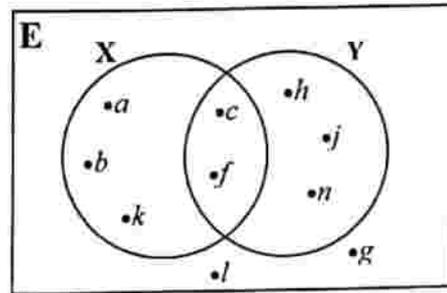
14   Calculate the simple interest on K360 000.00 invested at 12% per annum for 3 years.

15   The diagram below shows the bearing of Q from P which is 077°.
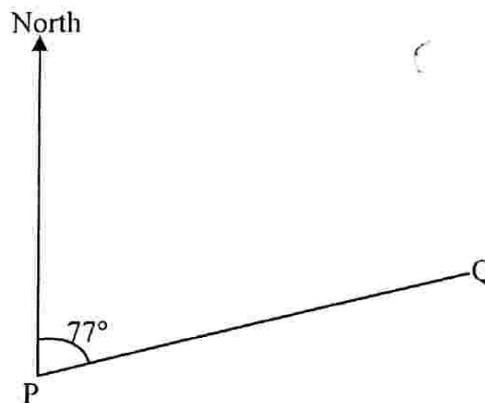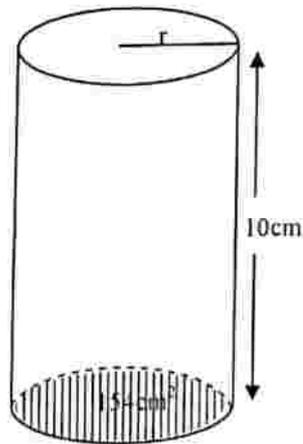

Find the bearing of P from Q.

16   Given that $x = 3$ and $y = -1$, find the value of $2x^2 - 3xy$.

17   Given that P = (−4   1   2),

    (a)   state the order of matrix P,

    (b)   find 4P.

18   Simplify $3a - 4b - 6a + b$.

19   The Venn diagram below shows sets X and Y.


List the elements of $X \cap Y'$.

20   The area of the base of a cylindrical block is 154cm² and its height is 10cm as shown below.

10cm

Given that the mass of the block is 385g, find its density.

21   Find the interior angle of a regular hexagon.

22   Convert 10.111_2 to base 10.

23   Find the value of $\sqrt[3]{27} + \sqrt{4}$.

[Turn over

24   The marks scored in an English test by learners in a Grade 9 class are distributed as shown in the bar chart below.
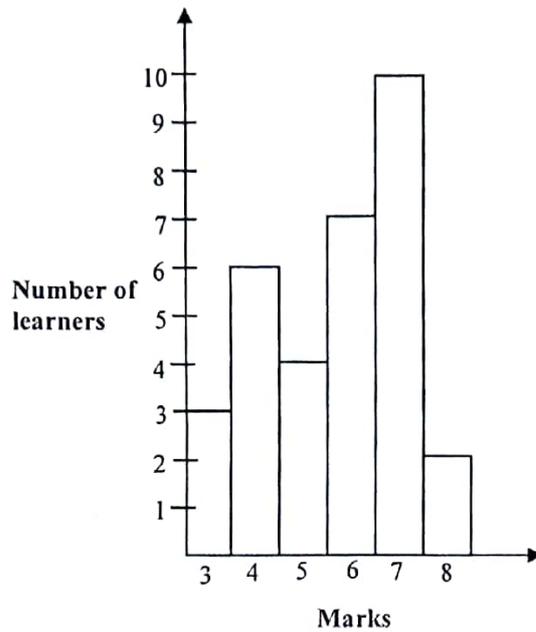
How many learners scored more than five marks?

25   Kasapato was given K150.00 to buy the following items:

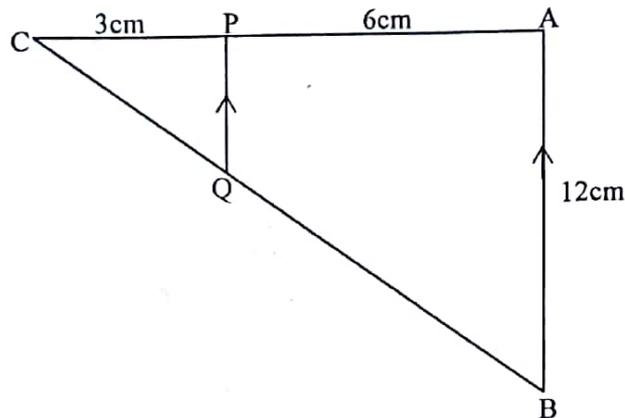2kg sugar at K24.00

1 loaf of bread at K9.00

6 books at K35.00

2.5 litres of cooking oil at K39.00

(a)   How much did he spend?

(b)   How much change did he receive?

26   Given that $f(x) = \dfrac{x+3}{2}$, find $f(-7)$.

27   In the diagram below, AB is parallel to PQ. AB = 12cm, AP = 6cm and CP = 3cm.

Write the ratio CQ to CB in its lowest terms.

28   If $x°$ and $(3x - 2)°$ are complementary angles, find the value of x.

29   Solve the inequation $8 + 3x > 2$.

30   A cylinder whose radius is 21cm has a curved surface area of 528cm². Calculate the height of the cylinder. [Take π as $\dfrac{22}{7}$].