



Entry Test

Academic Session 2019-20

MATHEMATICS

Total Marks **50**

1 Hour
Class: IG-III(X)

Write in block letters:

Candidate Name

Date

Kindly read the instructions carefully;

- 1 Answers must be written in ink.**
- 2 Write the number of question distinctly before each answer.**
- 3 CALCULATOR IS ALLOWED.**

FOR OFFICIAL USE ONLY

Total Marks		Marks Obtained		Percentage	
-------------	--	----------------	--	------------	--

Q 1. Meeraa went on a journey from P to Q to R. The first part of the journey, from P to Q, took 4 hours to travel 80km.

(a) Find the average speed for the journey from P to Q. [1]

(b) In the second part of the journey, from Q to R, she travelled 45 km. Her average speed for both parts of the whole journey from P to Q to R was 25km/h. Find the time taken for the second part of the journey, from Q to R [2]

Q 2. A tin contains 210 g of beans.

(i) 100 g of beans contains 4.5 g of protein.

Calculate the mass of protein in the tin. [1]

(ii) 100 g of beans contains 0.3 g of fat.

(a) What percentage of the beans is fat? [1]

(b) The recommended daily amount of fat is 70 g.

Calculate what percentage of the recommended daily amount is in the tin. [2]

Q 3. In 2006 the population of a town was 30 000. This was 5000 more than the population in 1999. Calculate the percentage increase in population. [2]

- Q 4. (a) The ratio of boys to girls in a class is 4 : 5 .
What fraction of the class are boys? [1]
- (b) The ratio of boys to girls in a school is 3 : 4 . There are 120 more girls than boys. How many students are in the school? [1]
- Q 5. A train travelled from P to Q. The journey took $2\frac{1}{2}$ hours.
- (a) Write down, in minutes, the time taken for the journey. [1]
- (b) The train left P at 11 48. At what time did it arrive at Q? [1]
- (c) The train travelled at an average speed of 56km/hr. Calculate the distance between P and Q. [2]
- Q 6. (a) Imran is paid \$16 per hour.
(i) One week he works 35 hours. Calculate the amount he is paid for the week. [1]

(ii) Imran is paid 20% extra per hour for working at weekends. Work out the total amount Imran is paid for working 4 hours at the weekend. [2]

Q 7. (a) Factorise completely

i) $3y^2 - 27$ [1]

ii) $3x^2 + 5x - 2$ [2]

(b) Express as a single fraction in its simplest form

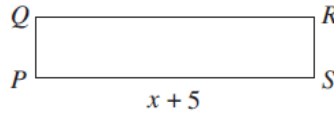
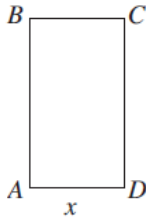
$$\frac{2}{x-3} - \frac{1}{x+2} \quad [2]$$

(c) Solve the simultaneous equations [2]

$$4x - y = 9$$

$$2x - 3y = -23$$

Q 8.



$ABCD$ and $PQRS$ are rectangles. Each rectangle has an area of 13 cm^2 . $AD = x$ centimetres and $PS = (x + 5)$ centimetres.

(a) Find, in terms of x , an expression for

(i) AB , [1]

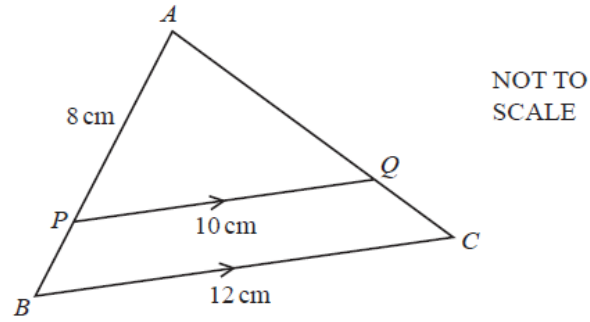
(ii) PQ . [1]

(b) Given that AB is 3 cm greater than PQ , form an equation in x and show that it simplifies to $3x^2 + 15x - 65 = 0$. [2]

(c) Solve the equation $3x^2 + 15x - 65 = 0$, giving each answer correct to 2 decimal places. [3]

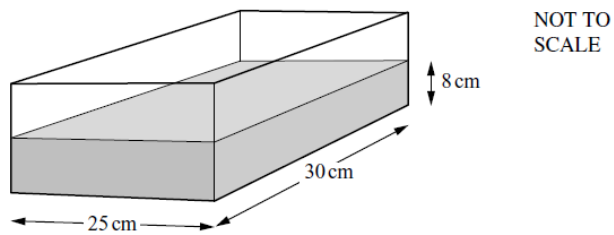
- Q 9. Given that y varies directly as the cube root of x , and that $y=18$ when $x=27$,
- (a) Express x in terms of y . [2]
- (b) Calculate the value of y when $x=125$ [1]
- Q 10. (a) A triangle has vertices $A(1,4)$, $B(6,0)$ and $C(12,4)$. Calculate
- i) The gradient of AB [1]
- ii) The coordinates of the midpoint of BC [1]
- (b) A straight line has gradient 3 and it passes through the point $(0,-1)$
- i) Write down the equation of the straight line. [2]
- ii) Given that the line passes through the point $(1,k)$, find the value of k . [2]

Q 11.



APB and AQC are straight lines. PQ is parallel to BC . $AP = 8\text{ cm}$, $PQ = 10\text{ cm}$ and $BC = 12\text{ cm}$. Calculate the length of AB . [2]

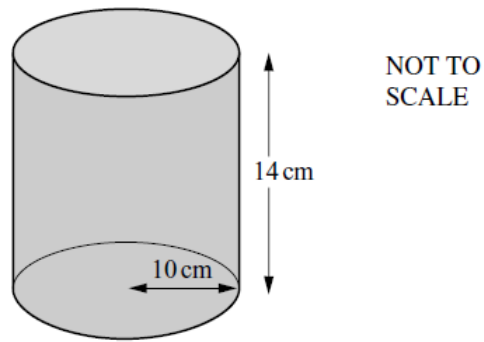
Q 12.



The diagram shows a rectangular tank of base 30 cm by 25 cm . It contains water to a depth of 8 cm .

(a) Calculate the volume of water in the tank. [2]

(b) The diagram shows a cylinder of radius 10 cm and height 14 cm which is full of water.



(i) Calculate the volume of water in the cylinder. [2]

(ii) All the water in the cylinder is poured into the rectangular tank. Find the total volume of water now in the tank. [1]

(iii) Calculate the new depth of water in the tank. [2]