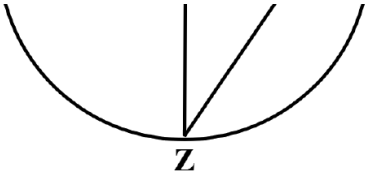
1. (a) Simplify: $\frac{3/4 - 7/8 + 1/2}{3/4 \text{ of } (7/8 - 1/2)}$

(b) Using $\log_{10}2 = 0.3010$ and $\log_{10}3 = 0.4771$, evaluate $\log_{10}0.24$

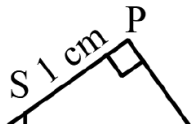
2. The sum of the ages of two brothers is 38 years. Four years ago, the age of the elder brother was the square of the younger brother's age. Find their ages.

3. In the diagram, triangle MXYZ is cut off from the circle, centre O. If |XZ| = 35 cm and |YZ| = 28 cm, find the area of the remaining part of the circle. [Take $\pi = 22/7$]



:YZ is cut off from the circle,
f the remaining part of the cir

$\leq 90°$, find without using tab



4. (a) If $\sin x = 5/13$ and $0° \leq x \leq 90°$, find without using tables or calculator, $(\cos x - 2 \sin x) / (2 \tan x)$.

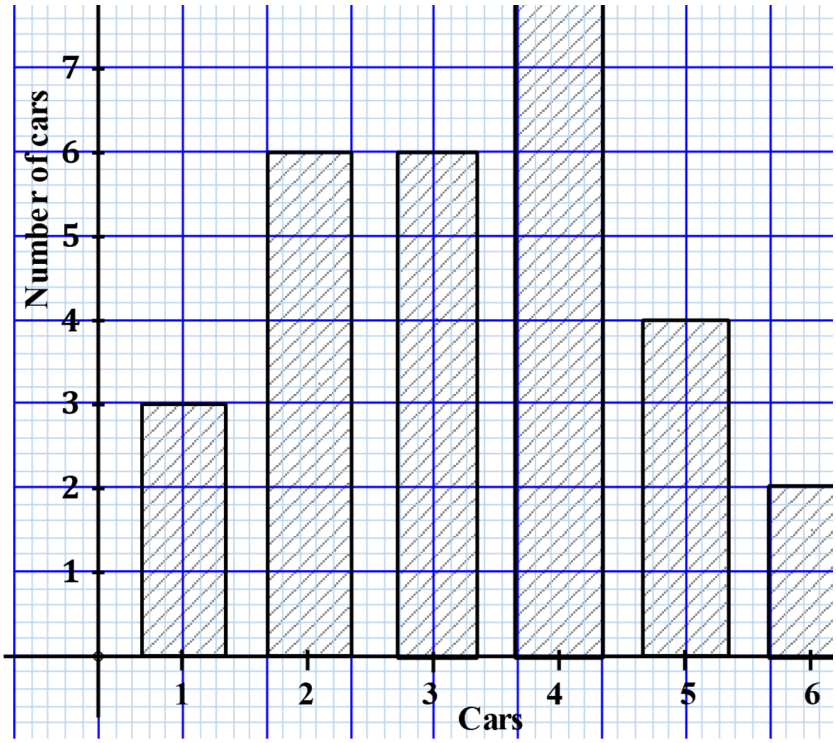
(b) In the diagram, |PS| = 1 cm, |SQ| = 8 cm, |QT| = |TR| = x cm and ∠STQ = ∠QPR = 90°.

riangle that is similar to triangle PQR.
ulate the value of x.

i. Name the triangle that is similar to triangle PQR.

ii. hence, calculate the value of x.

5. (a) The bar chart shows the number of cars sold by a dealer in the first six days of a month. Find the average number of cars sold per day.



he bar chart shows the number of cars sold by a dealer in the first six day

(b) A man spent 2/5 of a certain amount on food and shared the remainder between two brothers in the ratio 2:3. If the brother with the smaller share has GHC 6,000.00, what is the value of the amount initially?

6. A company buys a car for GHC 27,000.00 and sells it to Mr. Fosu for GHC 36,000.00 after a discount of 10% on the marked price.

(a) Calculate the:

i. marked price of the car;

ii. percentage profit made by the company.

(b) If Mr. Fosu sells the car after covering a mileage of 128,000 km, find the

i. value of the car if the rate of depreciation is GHC 0.03 per km.

ii. range of values for which Mr. Fosu could sell the car so that he does not lose more than GHC 2,000.00 or gain more than GHC 3,000.00 on the depreciated value.

7. (a) Copy and complete the following table of values for the relation $y = 2x^2 - 7x - 3$.

(b) Using a scale of 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = 2x^2 - 7x - 3$ for $-2 \leq x \leq 5$.

(c) From the graph, find the:

i. minimum value of y;

ii. the gradient of the curve at x = 1, correct to the nearest whole number.

iii. value of x for which $2x^2 - 5x + 1 = 2x + 4$.

8. (a) The point M(2,3), N(5, –2) and T(3, –5) are in the x-y rectangular plane. If kOM■ + lON■ = MT■, where k and l are real numbers, calculate the value of

i. k;

ii. l.

(b) Given that AC■ = (–7 / 12), calculate the:

i. length of AC, correct to three significant figures;

ii. bearing of C from A, correct to the nearest degree.

9. (a) Using ruler and a pair of compasses only, construct a quadrilateral PQRS such that |PQ| = 8 cm, ∠QPS = 105°, ∠PQS = 30°, |PR| = 9 cm and |RS| = |RQ|.

(b) Measure:

i. |RS|;

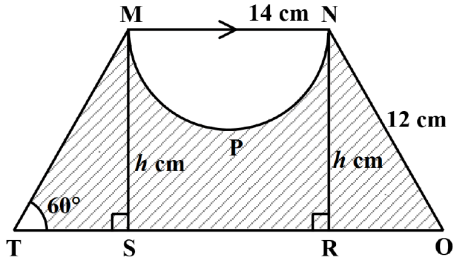
ii. |PS|;

iii. ∠QRS.

10. (a) Simplify: ¾√128 – √50, leaving your answer in a surd form.

(b) The diagram shows a trapezium MNOT in which MN || TO, |MN| = 14 cm, ∠MTO = 60° and |MT| = |NO| = 12 cm. If the semi-circle MPN is removed from the trapezium, calculate, correct to the nearest cm², the area of the remaining portion. [Take π = 22/7]

ify: $\frac{3}{4}\sqrt{128} - \sqrt{50}$, leaving your answer in a surd form.



iagram shows a trapezium MNOT in which $MN||TO$, $|MN| = 14$ c
d $|MT| = |NO| = 12$ cm. If the semi-circle MPN is removed from t
ate, correct to the nearest cm^2, the area of the remaining portion. [Tal

n long is placed against a vertical wall such that its lower end is 7 m

11. A pole 25 m long is placed against a vertical wall such that its lower end is 7 m from the foot of the wall on the same horizontal ground. If the upper end of the pole is pushed down by 2 m, calculate correct to 2 significant figures:

(a) how much further away from the wall the lower end will move;

(b) the angle the pole now makes with the horizontal.

12. The number of road accidents recorded in a given period was as follows:

No. of accidents	0	1	2	3	4	5	6	8	10	11	13	15	17	18	19
No. of days	20	10	8	7	5	3	3	5	4	4	3	2	2	3	1

(a) Using the group intervals 0 – 2, 3 – 5, 6 – 8, ..., prepare a group frequency distribution table for the data.

(b) Construct a cumulative frequency table.

(c) Draw a cumulative frequency curve.

(d) Use the cumulative frequency curve to estimate the:

i. median;

ii. upper quartile.

13. (a) A translation T takes the point P(1, 2) to P′(5, 3). What is the image of Q(3, 4) under T?

(b) Construct a table for multiplication in modulo 7 on the set {2, 3, 5, 6}. Use the table to solve the following equations:

i. $m \otimes m = 2$;

ii. $n \otimes (n \otimes 6) = 3$.

(c) Consider the statements:

p : Martin trains hard;

q : Martin wins the race.

If $p \Rightarrow q$, state whether or not the following statements are valid:

i. If Martin wins the race, then he has trained hard;

ii. If Martin does not train hard then he will not win the race;

iii. If Martin does not win the race then he has not trained hard.

End of Theory Questions