

INSTRUCTIONS

- Attempt all the questions.
- Show all the necessary calculations.

1. Given that
- $a * b$
- means
- $a + b^2$
- , find;

(a) $2 * 3$

(b) $2 * (1 * -2)$

2. Simplify
- $$\frac{(16)^{\frac{3}{4}} \times (64)^{\frac{1}{3}} \times \left(\frac{1}{32}\right)^{\frac{2}{5}}}{(128)^{\frac{1}{7}}}.$$

3. Express
- $\frac{2}{3\sqrt{2} - \sqrt{3}}$
- in form of
- $a\sqrt{2} + b\sqrt{3}$
- .

4. Solve the inequality
- $\frac{3}{2} - \frac{5x}{3} > 8 + \frac{x}{2}$
- .

5. Given that
- $g(x) = ax^2 + bx + 5$
- . If
- $g(2) = 21$
- and
- $g(-3) = 26$
- , values of
- a
- and
- b
- .

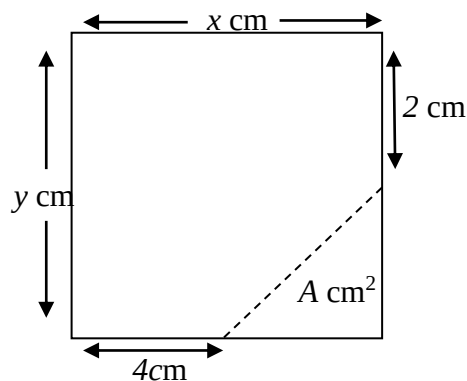
6. Find the equation of a straight line passing through point
- $(3, -1)$
- and is perpendicular to the line
- $2y + 3x = 8$
- .

7. Solve quadratic equation
- $x^2 = 2 - x$
- .

8. It is given that
- $\mathbf{x} = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$
- and
- $\mathbf{y} = \begin{pmatrix} 6 \\ -1 \end{pmatrix}$
- . Find ;

(i) The column vector of $\mathbf{x} - \mathbf{y}$ (ii) The value of $|\mathbf{x}| + |\mathbf{y}|$

9.



The diagram shows a rectangle x cm
By y cm. The triangular area is
 $A \text{ cm}^2$.

- Obtain an equation for A in Terms of x and y .
- Make y the subject in the equation above.

10. A ladder 12m long which is inclined at an angle of
- 54°
- to the ground just reaches to the top of a building. Calculate the height of the building.

