

PROBLEM SOLVING INVOLVING ALGEBRAIC EXPRESSIONS

1. The age of Azhar's mother was four times the age of Azhar last year. If Azhar is n years old now, state the age of Azhar's mother seven years later in terms of n .

$$\begin{aligned}\text{Azhar's mother's age last year} &= x \text{ Azhar's age} \\ &= x n \\ &= \end{aligned}$$

$$\text{Azhar's mother's age seven years later} = + 7$$

2. Aina makes a cubic model from a manila card. If the volume of the cube is $(2 + 3p)^3$ cm³, find the total surface area of the cube in terms of p .

Let's refresh a bit : Do you remember Chapter 3? When we say that the volume of a cube is 27, how did we find the length of a cube?

That's right, we used cube root.

$$\text{Length of a side of a cube with volume 27} = \sqrt[3]{27} = \sqrt[3]{3^3} = 3$$

$$\text{Back to Question 2 : Length of a side of a cube} = \sqrt[3]{(2 + 3p)^3} =$$

$$\text{Surface area of one face of a cube} = (2 + 3p) \times () = (2 + 3p)^2$$

Number of surfaces a cube has =

Total surface area of the cube in terms of p

$$= \text{Surface area of one cube} \times \text{Number of surfaces in a cube}$$

$$= \times$$

$$= 6 ()^2 \text{ cm}^2$$

3. The area of a rectangle is $12a^3b^2$. Express the length of the rectangle in terms of ab .



Length of rectangle \times Width of rectangle = Area of rectangle

$$\text{Length of rectangle} \times = 12a^3b^2 \quad [\text{HINT : look at the diagram for width}]$$

$$\begin{aligned} \text{Length of rectangle} &= \frac{12a^3b^2}{3ab} \\ &= \frac{\cancel{12a} \cancel{b}}{\cancel{3} \cancel{ab}} \\ &= \frac{\cancel{\times} \cancel{\times} \cancel{\times} \cancel{\times} \cancel{\times}}{\cancel{\times} \cancel{\times}} \\ &= 4a^2b \end{aligned}$$

4. Zuriana's mother gives a certain amount of money to Zuriana to buy satay and otak-otak.

Zuriana buys m sticks of satay which costs RM x for 5 sticks and receives a balance of 80 cents.

Then, she buys $2m$ pieces of otak-otak which costs RM y per piece and receives a balance of 60 cents.

(a) Write an algebraic expression for the total amount of money received by Zuriana.

Type of Food	Number of Sticks / Pieces	Price per stick (RM) / Price per piece (RM)	Total price (RM)
Satay		$\frac{x}{5}$	$\frac{x}{5} \times m = \frac{mx}{5}$
Otak-otak			$2m \times y =$

Total amount of money received by Zuriana

= Total price of Satay + Balance + Total price of Otak-otak + Balance

$$= \frac{mx}{5} + \quad + 2my +$$

$$= \frac{mx}{5} + 2my + 1.40$$

(b) If $m = 10$, $x = 4$ and $y = 12$, find the total amount of money that Zuriana received from her mother.

Total amount of money Zuriana received

$$\begin{aligned} &= \frac{mx}{5} + 2my + 1.40 \\ &= \frac{(\quad)(\quad)}{5} + 2(\quad)(\quad) + 1.40 \\ &= RM \end{aligned}$$