



ALADWANA

Gem



Mathematics

للفصف 1 الإعدادى

إجابات نماذج اختبارات الأضواء لشهر إبريل

الفصل الدراسى الثانى 2024 – 2025

1 Choose the correct answer:

- a If $(x + 5)(x - 5) = x^2 + bx - 25$, then $b = \dots\dots\dots$ (0, 10, 5, -10)
- b If the area of a square is 200 cm^2 , then the length of its diagonal = $\dots\dots\dots$ cm
(10, 20, 25, 15)
- c $(x^3 - x^2) \div x^2 = \dots\dots\dots$ (0, $x + 1$, $x - 1$, $2x + 1$)
- d The image of the point (5, 0) by reflection in Y-axis is $\dots\dots\dots$
[(5, 0), (-5, 0), (0, 5), (0, -5)]
- e If $x = \sqrt[3]{-0.027}$, then $x = \dots\dots\dots$ (0.3, -0.3, ± 0.3 , 0.9)

2 Answer each of the following:

- a Simplify the expression to the simplest form:
 $(x - 2)^2 + (x + 3)(x - 2)$, then find the numerical value of the resulting expression when $x = -2$
- $$(x - 2)^2 + (x + 3)(x - 2)$$
- $$= x^2 - 4x + 4 + x^2 + x - 6$$
- $$= 2x^2 - 3x - 2$$
- The numerical value when $x = -2$ is
- $$2(-2)^2 - 3 \times -2 - 2 = 8 + 6 - 2 = 12$$
- b A trapezium has an area of 180 square inches and height of 12 inches.
Find the length of its middle base.

$$\text{The length of its middle base} = \frac{\text{Area of trapezium}}{\text{height}}$$

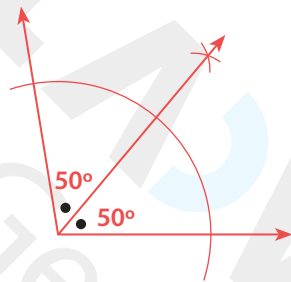
$$= \frac{180}{12} = 15 \text{ inches}$$

- c Find the quotient of $(x^2 - 2x - 15)$ divided by $(x + 3)$

$$\begin{array}{r}
 x - 5 \\
 x + 3 \overline{) x^2 - 2x - 15} \\
 \underline{\ominus x^2 + 3x} \\
 - 5x - 15 \\
 \underline{\oplus 5x + 15} \\
 0 \\
 0
 \end{array}$$

The quotient is: $x - 5$

- d Draw an angle of measure 100° , then bisect it using a ruler and compass.



- e Which has a greater area?

A rhombus with diagonals lengths of 10 cm and 8 cm or a square with a diagonal length 9 cm.

$$\begin{aligned}
 \text{The area of a rhombus} &= \frac{1}{2} \times d_1 \times d_2 \\
 &= \frac{1}{2} \times 10 \times 8 = 40\text{cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{The area of a square} &= \frac{1}{2} \times d^2 \\
 &= \frac{1}{2} \times (9)^2 = 40.5\text{cm}^2
 \end{aligned}$$

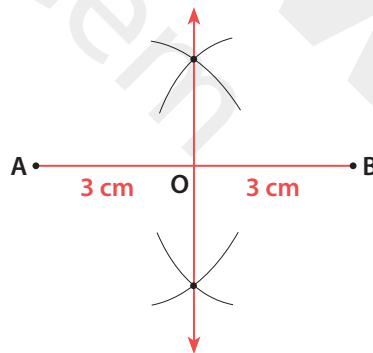
The area of the square is greater than the area of the rhombus.

1 Choose the correct answer:

- a If the area of a rhombus is 20 cm^2 , then the product of its diagonal lengths is cm^2 (10, **40**, 5, 80)
- b If $(x + 2y)^2 = x^2 + kxy + 4y^2$, then $k =$ (6, 8, 3, **4**)
- c If $(x^2 + 5x + 25)$ is one of factors of the expression $(x^3 - 125)$, then the other factor is (**$x - 5$** , $x + 5$, x , $x^2 - 5$)
- d The image of the point (3,5) by reflection in the X-axis is [(3, 5), (-3, 5), **(3, -5)**, (-3, -5)]
- e If $(x + y)^2 = 16$, and $xy = 3$, then what is the value of $x^2 + y^2$? (13, **10**, 48, $5\frac{1}{3}$)

2 Answer each of the following:

- a Draw \overline{AB} of length 6 cm and bisect it using the ruler and the compass.



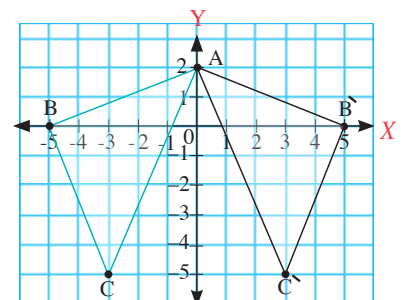
- b Draw $\triangle ABC$ where $A(0, 2)$, $B(-5, 0)$ and $C(-3, -5)$, then draw the image of $\triangle ABC$ by a reflection in the Y-axis.

$A(0, 2) \rightarrow A(0, 2)$ (the same point)

$B(-5, 0) \rightarrow B'(5, 0)$

$C(-3, -5) \rightarrow C'(3, -5)$

$\triangle AB'C'$ is the image of $\triangle ABC$ by reflection in the Y-axis



- c Find the solution set of the following equation in \mathbb{Z} : $x(x - 2) + 2(x - 2) = 0$

$$x(x - 2) + 2(x - 2) = 0$$

$$x^2 - 2x + 2x - 4 = 0$$

$$x^2 - 4 = 0$$

$$x^2 = 4$$

$$x = \pm 2$$

The solution set = $\{-2, 2\}$

- d A trapezium has an area of 135 cm^2 and a height of 9 cm. If the length of one of its bases is 10 cm, find the length of its other base.

$$\text{The middle base length} = \frac{\text{The area}}{\text{height}} = \frac{135}{9} = 15 \text{ cm}$$

$$\begin{aligned} \text{The length of the other base} &= (2 \times \text{middle base length}) - \text{length of the first base} \\ &= 2 \times 15 - 10 \\ &= 30 - 10 = 20 \text{ cm} \end{aligned}$$

- e If $x-1$ is one of factors of the expression: $x^2 - 5x + 4$, find the other factor.

$$\begin{array}{r} \quad \quad \quad x-4 \\ \hline x-1 \quad \left| \begin{array}{r} x^2 - 5x + 4 \\ \ominus x^2 \oplus x \\ \hline -4x + 4 \\ \oplus -4x \ominus 4 \\ \hline 0 \quad 0 \end{array} \right. \end{array}$$

The other factor is: $x - 4$

1 Choose the correct answer:

- a A trapezium with an area 40 cm^2 and the length of one of its parallel bases is 4 cm and its height is 8 cm, then the length of the other base = cm. (6, 12, 10, 8)
- b If $(x - 3)(x + 2) = x^2 - x + C$, then $C = \dots\dots\dots$ (-6, -1, 6, -12)
- c The image of the point $(2, -1)$ by reflection in the Y-axis is
[(2, 1), (-2, 1), (2, -1), (-2, -1)]
- d The quotient of: $\frac{15a^3Cb^2}{3a^2b^2C} = \dots\dots\dots$ (5 abc, $5a^2bc$, **5a**, 5 bc)
- e The multiplicative inverse of 2^{-1} is (**2**, $\frac{1}{5}$, 0, 1)

2 Answer each of the following:

- a If the area of a rectangle equals $(10x^3 + 15x^2 + 5x)$ square units, and the length of one of its dimensions is $(5x)$ length units.
Find the length of the other dimension in terms of x .

$$\therefore \text{The area of rectangle} = \text{Length} \times \text{Width}$$

$$\therefore \text{Length} = \text{Area} \div \text{Width}$$

$$\begin{aligned} \text{The other dimension} &= \frac{10x^3 + 15x^2 + 5x}{5x} \\ &= (2x^2 + 3x + 1) \text{ length units} \end{aligned}$$

- b Divide $x^2 - 5x + 6$ by $x - 2$

$$\begin{array}{r} x-3 \\ x-2 \overline{) x^2 - 5x + 6} \\ \underline{\ominus \oplus} \\ x^2 - 2x \\ \underline{- 3x + 6} \\ \underline{\oplus \ominus} \\ 0 \\ 0 \end{array}$$

The quotient is: $x - 3$

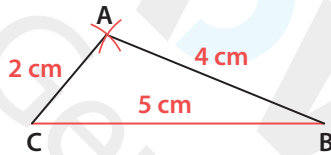
- c Find the product of the following algebraic expressions:

$(x - 3)(x^2 - 4x + 6)$, then find the numerical value at $x = -1$

$$\begin{aligned} & (x - 3)(x^2 - 4x + 6) \\ &= x^3 - 4x^2 + 6x - 3x^2 + 12x - 18 \\ &= x^3 - 7x^2 + 18x - 18 \\ & \text{At } x = -1 \\ &= (-1)^3 - 7(-1)^2 + 18(-1) - 18 \\ &= -1 - 7 - 18 - 18 = -44 \end{aligned}$$

- d Draw the triangle ABC where: $AB = 4$ cm, $BC = 5$ cm and $AC = 2$ cm, and determine the type of the triangle according to measures of its angles.

The type of the triangle is : **Obtuse-angled triangle.**



- e A trapezium has an area of 500 cm^2 , a height of 25 cm, and the ratio between the lengths of its parallel bases is $2 : 3$. What is the length of each base?

$$\text{Length of Middle base} = \frac{500}{25} = 20 \text{ cm}$$

L. of First base	:	L. of second base	:	sum
2	:	3	:	5
?	:	?	:	40

$$\text{The value of each part} = \frac{40}{5} = 8 \text{ cm}$$

$$\text{The length of first base} = 2 \times 8 = 16 \text{ cm}$$

$$\text{The length of second base} = 3 \times 8 = 24 \text{ cm}$$

1 Choose the correct answer:

- a The quotient of: $(-8x^3) \div (2x) = \dots\dots\dots$. ($4x$, $-4x^2$, $4x^2$, $2x^2$)
- b If $x + y = 6$, then the numerical value of the algebraic expression:
 $x^2 + 2xy + y^2$ is $\dots\dots\dots$. (12 , 24 , 36 , 48)
- c If the side length of a rhombus is 4 cm and its height is 3 cm, then its area = $\dots\dots\dots$ cm².
(6 , 12 , 14 , 18)
- d The image of the point (1, -3) by reflection in X-axis is $\dots\dots\dots$.
[$(1, 3)$, $(-1, -3)$, $(1, -3)$, $(3, -1)$]
- e If $-x < 3$, which of the following could be the value of x ? (-5 , -6 , -2 , -7)

2 Answer each of the following:

- a A rhombus with diagonal lengths $(2x + 4)$ cm and $(x + 5)$ cm. Find its area in terms of x , then find the numerical value of the area when $x = 2$

$$\begin{aligned} \text{The area of a rhombus} &= \frac{1}{2} \times d_1 \times d_2 \\ &= \frac{1}{2} (2x + 4)(x + 5) \\ &= (x + 2)(x + 5) \\ &= (x^2 + 7x + 10) \text{ cm}^2 \end{aligned}$$

$$\text{The numerical value when } x = 2 \text{ is } 2^2 + 2 \times 7 + 10 = 28 \text{ cm}^2$$

- b Find the solution set in \mathbb{Q} for the inequality :

$$2(x + 2) \geq 5x + 1$$

$$2x + 4 \geq 5x + 1$$

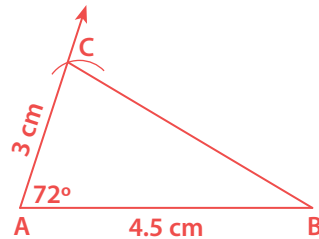
$$2x - 5x \geq 1 - 4$$

$$-3x \geq -3$$

$$x \leq 1$$

$$\text{Solution set is } \{x : x \in \mathbb{Q}, x \leq 1\}$$

- c Draw the triangle ABC, where $AB = 4.5$ cm, $AC = 3$ cm, and $m(\angle A) = 72^\circ$



- d Find the value of b which makes the expression $(4x^2 + 11x + b)$ divisible by $(x - 1)$

$$\begin{array}{r}
 4x + 15 \\
 \hline
 x - 1 \overline{) 4x^2 + 11x + b} \\
 \underline{-(4x^2 - 4x)} \\
 15x + b \\
 \underline{-(15x - 15)} \\
 0 0
 \end{array}$$

$b = -15$

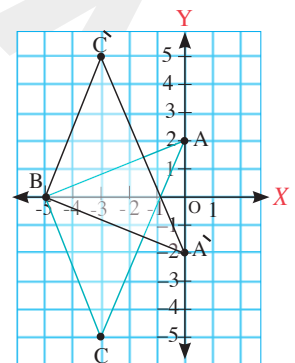
- e Draw ΔABC where $A(0, 2)$, $B(-5, 0)$ and $C(-3, -5)$, then draw the image of ΔABC by a reflection in the X-axis.

$A(0, 2) \rightarrow A'(0, -2)$

$B(-5, 0) \rightarrow B(-5, 0)$ (the same point)

$C(-3, -5) \rightarrow C'(-3, 5)$

$\Delta A'BC'$ is the image of ΔABC by reflection in the X-axis



1 Choose the correct answer:

- a A trapezium with a middle base length of 8 cm and height 7 cm, then its area = cm².
(28, **56**, 112, 30)
- b If $x - 3y = 5$, and $x + 3y = 8$, then $x^2 - 9y^2 =$
(20, **40**, 80, 26)
- c The image of the point (3,0) by reflection in X-axis is
[**(3, 0)**, (-3, 0), (0, 3), (0, -3)]
- d $4^3 \times 2^3 =$
(**2⁹**, 2⁶, 2⁷, 2⁸)
- e $\frac{8x^2 - 12x}{4x} =$
(-x, -2x², 2x² - 3x, **2x - 3**)

2 Answer each of the following:

- a Two pieces of land are equal in area, the first in the shape of a rhombus with diagonals lengths of 6 meters and 18 meters, and the other is in the shape of a trapezium, its height is 9 meters. Find the length of the middle base of the trapezium.

$$\begin{aligned} \text{The area of a rhombus} &= \frac{1}{2} \times d_1 \times d_2 \\ &= \frac{1}{2} \times 6 \times 18 = 54 \text{ m}^2 \end{aligned}$$

Since the area of the rhombus = The area of the trapezium

$$\text{Then, the middle base length} = \frac{\text{The area}}{\text{height}} = \frac{54}{9} = 6 \text{ m}$$

- b If $(45x^2y^3 - 30xy) \div (-5x) = nxy^3 + 6y$, then find the value of n

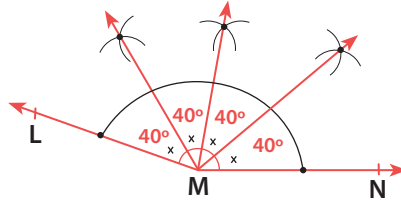
$$\therefore (45x^2y^3 - 30xy) \div (-5x) = nxy^3 + 6y$$

$$\therefore \frac{45x^2y^3 - 30xy}{-5x} = nxy^3 + 6y$$

$$-9xy^3 + 6y = nxy^3 + 6y$$

$$n = -9$$

- c Draw an angle LMN of measure 160° , then divide it into 4 equal angles using the ruler and the compass.



- d Simplify the following expression to its simplest form: $2x(3x - 1) + 3x(x + 2)$, then find the numerical value at $x = -2$

$$2x(3x - 1) + 3x(x + 2)$$

$$= 6x^2 - 2x + 3x^2 + 6x$$

$$= 9x^2 + 4x$$

$$= 9(-2)^2 + 4 \times -2 = 36 - 8 = 28$$

- e Draw the triangle ABC where $AB = 4$ cm, $AC = 6$ cm and $m(\angle BAC) = 100^\circ$

