



2025
2026

1

Mathematics

Performances and Assessments

Nom:

Classe:

École:

First Preparatory
Second term

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Introduction

The Ministry of Education and Technical Education recognizes the importance of empowering teachers with effective tools that elevate classroom performance, enhance the quality of education, and improve its outcomes. This is a real response to the voices of teachers, interacting with the feedback channels from the educational field, and meeting the needs of teachers for flexible and comprehensive educational tools that assist them in fulfilling their noble educational mission.

This book has been designed to serve as an integrated educational support for teachers, helping them in planning and executing their teaching tasks efficiently. It also facilitates continuous assessment processes. The content has been designed to offer diverse models of effective classroom performance and educational activities created based on an interactive methodology that enhances active learning. It contributes to a qualitative shift in teaching practices, clearly focusing on the student as the core of the educational process.

The book includes formative and diagnostic questions, as well as purposeful learning tasks that students can complete as homework, enhancing the integration of learning inside and outside the classroom and contributing to the sustainable construction of learning for students. These tools help develop critical and creative thinking, deepen understanding, and support and enhance student motivation, giving them a sense of achievement and excellence.

It also includes short weekly tests and periodic assessments, allowing teachers to measure the extent of learning outcomes and address learning gaps early, providing feedback on the initial results. The performances at the end of each month are concluded with immediate training sessions that help improve student performance. These assessments are gradual, taking into account individual differences and targeting various levels of cognitive development, within a framework of diversity, depth, and integration, preparing students for monthly tests efficiently.

This book is a true translation of the Ministry's directions to ease the burdens on parents, provide supporting educational content that enriches the classroom environment, and allow teachers more time for educational innovation and productive interaction with their students. It also forms an effective tool in supporting the Ministry's direction to enhance learning outcomes, achieving a real transformation in the learning environment—from memorization to understanding, from rote learning to application, and from passive reception to active participation.

When we place this work in the hands of teachers and students, we hope it will be a valuable contribution to improving academic performance, enhancing the quality of education, and becoming an additional cornerstone in building a generation that is aware and knowledgeable, equipped with the skills and competencies needed for success in a world that demands creativity and innovation. It aims to have a tangible impact in realizing an ambitious educational vision for the future of education in our beloved country.

Allah is the one sought for help, and He guides to the right path...

Unit (1)

Week (1)

Lesson (1): Powers
and Exponents

Date: / /

Classroom Performance:

Activity (1): Power Challenge

Speed Challenge: The teacher uses a stopwatch to judge who is the fastest to reach the equal cards from the set of the following cards has a set of powers of some numbers written on them:



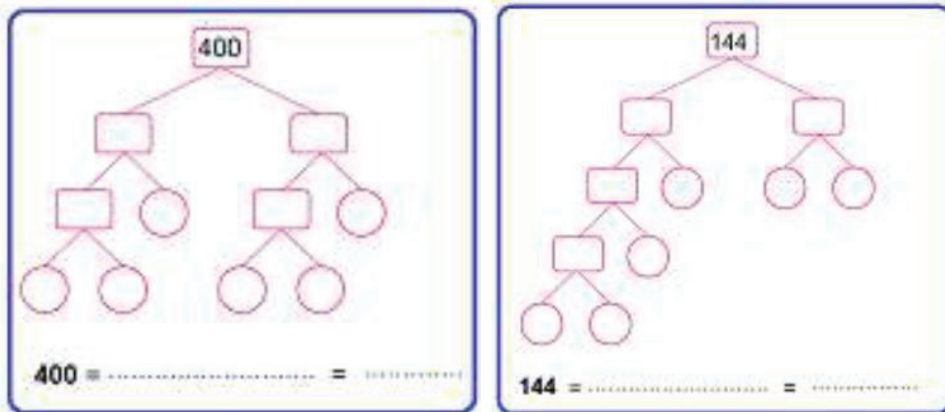
Identify with your classmates the equal cards and explain why ?

Activity (2): Exponential form and factors of a number

Share with your classmates and write the following numbers in exponential form so that the base is a prime number.

(Numbers inside circles are prime, numbers inside squares are not prime)

Use the attached factor tree or draw your own factor tree.





Homework:

1) Find the product of each :

$$-2^4, (-4)^2, \text{ A quarter of } 2^3, \text{ three times } (100)^0$$

2) Find in simplest form:

$$\frac{(-3)^5 \times (-3)^9}{(-3)^4 \times (-3)^8}$$

3) If a and b are positive integers and $b^a = 64$, find the smallest value of $a + b$

4) Find the value of the algebraic expression in its simplest form :

$$\frac{(x)^{-4} \times (x)^{-5}}{(x)^{-6} \times (x)^{-7}}$$

Then find the numerical value of the result when $x = 2$

5) If :

$$4^2 + 4^2 + 4^2 + 4^2 = 2^n$$

Find the value of n.

Unit (1)

Week (1)

Lesson (2):
Scientific Notation

Date: / /

Classroom Performance:

Activity (1): Journey into space

Have you ever asked yourself: Does the distance between the Earth and the Sun remain constant throughout the year?

The Earth revolves around the Sun in an elliptical orbit that takes 365.25 days. Therefore, the distance between the Sun and Earth varies. The closest distance is 147,100,000 square kilometers, while the farthest distance is 152,100,000 square kilometers.

These distances are written in standard notation. Can you write them in scientific notation?



Activity (2): World of astronomy

Share with your classmates and arrange the masses of the following planets in a descending order.

Planet	Saturn	Jupiter	Earth	Neptune
Mass in kilograms	5.69×10^{26}	1.9×10^{27}	5.97×10^{24}	1.02×10^{26}

Homework:

- 1) If a and b are positive integers and $64 = b^a$, find the maximum value of $a + b$
- 2) Write in scientific notation each of :

$$14 \times 10^4, \quad 0.00000025, \quad 2000000$$

- 3) Write in standard form each of :

$$7.2 \times 10^{-3}, \quad 3.5 \times 10^5$$

- 4) If: $356 \times 10^{-9} = A \times 10^{-7}$

Find the value of A .

- 5) If: $4.5 \times 10^3 = K \times 10^2$

Find the value of K .

Unit (1)

Week (2)

Lesson (3) : Square
Roots and Cube Roots

Date: / /

Classroom Performance:

Activity (1): Discover by Yourself

Among the numbers: 25, 20, 18, 16, 12, 9, 6, 4, 1
Identify the numbers that can be written in the
form:

$a \times a$ where a is an integer, then think about
what is the next number after 25 that can be
written in the form $a \times a$
where a is an integer?



Activity (2): Pair matching

Identify the pairs of equal numbers cards below:

$$\sqrt{25}$$

$$\sqrt{49}$$

$$\sqrt{(3)^2}$$

$$\sqrt{\frac{49}{100}}$$

$$|-7|$$

$$0.4$$

$$3$$

$$5$$

$$\frac{1}{2}$$

$$\frac{5}{2}$$

$$\sqrt{0.16}$$

$$\sqrt{\frac{625}{100}}$$

$$\sqrt{125}$$

Homework:

1) Find the value of each of the following:

$$\sqrt{(-3)^2}, -\sqrt{36}, \pm\sqrt{81}, \sqrt{0.25}, \sqrt{a^6}$$

2) $\sqrt{\frac{144a^8}{36a^6}} = \dots\dots\dots$

3) Find the solution to the following equation in Q:

$$x^2 - 2 = 47$$

4) Find the solution to the following equation in Q:

$$25x^2 - 4 = 32$$

5) Find the solution to the following equation in Z:

$$(x - 1)^2 = 25$$

Weekly Assessment - Week (2)

Model (A)

First: Choose the correct answer:

1) Which of the following numbers is written in scientific notation?

- a) 14.41×10^{-5} b) 0.4×10^2 c) 35.4×10^8 d) 1.1×10^{-3}

2) Half of $2^{14} = \dots\dots\dots$

- a) 2^7 b) 2^{13} c) 1^{14} d) 1^7

Second: Answer the following:

3) Find in simplest form the value of:

$$\frac{2^{10} \times 2^{-7}}{2^5 \times 2^{-3}}$$

4) Find the solution to the following equation in Z:

$$2x^2 + 2 = 74$$

5) Simplify in the simplest form:

$$\left(\frac{1}{3}\right)^0 \times \left(\frac{1}{3}\right)^2 \times \sqrt{2\frac{1}{4}}$$

Model (B)

First: Choose the correct answer:

- 1) Which of the following numbers is written in scientific notation?
 a) -5.1×10^{-5} b) 0.51×10^2 c) 0.154×10^8 d) 51.1×10^{-3}
- 2) Third of $3^{15} = \dots\dots\dots$
 a) 3^{14} b) 3^5 c) 1^5 d) 3^3

Second: Answer the following:

- 3) Find in simplest form the value of:

$$\frac{3^3 \times 3^5}{3^6 \times 3^{-2}}$$

- 4) Find the solution to the following equation in Z:

$$3x^2 + 5 = 80$$

- 5) Simplify in the simplest form:

$$\left(\frac{2}{5}\right)^2 \times \left(\frac{1}{5}\right)^0 \times \sqrt{6\frac{1}{4}}$$

Model (C)

First: Choose the correct answer:

- 1) Which of the following numbers is written in scientific notation?
 a) 145×10^{-7} b) 0.5×10^8 c) 3.4×10^5 d) 12.1×10^{-3}
- 2) Fifth of $5^{25} = \dots\dots\dots$
 a) 5^5 b) 5^{15} c) 5^{24} d) 1^{25}

Second: Answer the following:

- 3) Find in simplest form the value of:

$$\frac{4^8 \times 4^{-5}}{4^9 \times 4^{-6}}$$

- 4) Find the solution to the following equation in Z:

$$2x^2 + 5 = 37$$

- 5) Simplify in the simplest form:

$$\left(\frac{1}{9}\right)^0 \times \left(\frac{3}{2}\right)^2 \times \sqrt{\frac{64}{81}}$$

Unit (1)

Week (3)

Continue Lesson (3): Square
Roots and Cube Roots

Date: / /

Classroom Performance:

Activity (1): Cube and Cube Root

If you know that the volume of a cube =
edge length \times itself \times itself, and the
volumes of three cubes are:

64, 27, 8 cubic centimeters.

Can you find the edge length of each
cube?



Activity (2): Pair matching

Identify the pairs of equal numbers
cards below:

$$\sqrt[3]{0.343}$$

$$\sqrt[3]{(-5)^3}$$

$$\sqrt{\frac{49}{100}}$$

$$\frac{7}{10}$$

$$\sqrt[3]{15\frac{5}{8}}$$

$$2\frac{1}{2}$$

$$-5$$

$$\sqrt{\frac{25}{4}}$$

$$\sqrt{25}$$

Homework:

1) Find the value of each of the following:

$$\sqrt[3]{\frac{-64x^3}{125y^6}}, \quad \sqrt[3]{\sqrt{64}}, \quad \sqrt[3]{216 - 6^3}, \quad \sqrt[3]{\frac{8}{125}}, \quad \sqrt[3]{-27}$$

2) Find in the simplest form: $\left(\frac{1}{2}\right)^3 + \sqrt{\frac{25}{64}} - \sqrt[3]{\frac{125}{64}}$

3) Find the solution to the following equation in Q:

$$27x^3 + 4 = 31$$

4) Find the solution to the following equation in Z:

$$3x^3 - 8 = 2x^3 + 19$$

5) Find the solution to the following equation in Z:

$$(x - 1)^3 + 2 = -62$$

Weekly Assessment - Week (3)

Model (A)

First: Choose the correct answer:

1) $\sqrt[3]{x^{15}} = \sqrt{\dots}$

- a) x^{15} b) x^{45} c) x^5 d) x^{10}

2) $\sqrt[3]{x} = -\sqrt{36}$

- a) -6 b) -66 c) 216 d) -216

Second: Answer the following:

3) A cube has a volume of 729 cubic units. Find the length of its edge.

4) If:

$$3^3 + 3^3 + 3^3 = 3^n$$

Find the value of n

5) Find the solution to the following equation in Z:

$$(x - 1)^3 = 216$$

Model (B)

First: Choose the correct answer:

1) $\sqrt[3]{x^9} = \sqrt{\dots}$

a) x^{18}

b) x^{27}

c) x^9

d) x^6

2) $\sqrt[3]{x} = -\sqrt{16}$

a) -4

b) -8

c) 64

d) -64

Second: Answer the following:

3) A cube has a volume of 512 cubic units. Find the length of its edge.

4) If: $3^5 + 3^5 + 3^5 = 3^n$

Find the value of n

5) Find the solution to the following equation in Z:

$$(x + 1)^3 = 343$$

Model (C)

First: Choose the correct answer:

1) $\sqrt[3]{x^{18}} = \sqrt{\dots}$

a) x^{12}

b) x^{54}

c) x^6

d) x^9

2) $\sqrt[3]{x} = -\sqrt{9}$

a) -3

b) -9

c) 27

d) -27

Second: Answer the following:

3) A cube has a volume of 216 cubic units. Find the length of its edge.

4) If: $3^6 + 3^6 + 3^6 = 3^n$

Find the value of n

5) Find the solution to the following equation in Z:

$$(x + 2)^3 = 729$$

Unit (2)

Week (4)

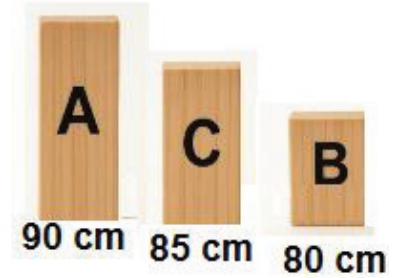
Lesson (1):
Inequalities

Date: / /

Classroom Performance:

Activity (1): Who is taller?

You have 3 pieces of wood. Piece A is 90 cm long, Piece B is 80 cm long and Piece C is 85 cm long. According to the conditions, determine the required pieces from the following:



- 1- Pieces less than 85 cm long
- 2- Pieces greater than or equal to 85 cm
- 3- Pieces less than or equal to 90 cm long

Then, Express each of the previous situations with an appropriate inequality.

Activity (2): Playing with inequalities

Match each inequality with its appropriate situation below:

$$2x < 5$$

Hossam needs at least two hours to solve the homework

$$x \geq 2$$

Twice the number less than 5

$$x \geq 5$$

To obtain the discount, your purchases must exceed 5 thousand pounds.

$$x > 5000$$

An accountant with at least 5 years of experience is required.

Homework:

- 1) Write a suitable inequality that expresses the situation: To obtain the discount, your purchases must exceed 1000 pounds.
- 2) Find the solution to the inequality in Z:

$$4 - 3X \geq 13$$

- 3) Find the solution to the inequality in N:

$$\frac{1}{2}x - 2 \leq -1$$

- 4) Write a suitable inequality to express the situation:
"The mass of the suitcase must not exceed 7 kilograms in order to carry it on the plane while traveling"
- 5) Find the solution to the inequality in Q:

$$2(2x - 3) \leq 4$$

Unit (2)

Week (4)

Lesson (2): Multiplying an
Algebraic Term by an Algebraic
Term or an Algebraic Expression

Date: / /

Classroom Performance:

Activity (1): Wooden Door

A carpenter wants to build a rectangular wooden door with dimensions $(4x)$ and $(6x^2 + 3x + 3)$ in length units. Find the area of the door in terms of x .

Then work with a classmate to calculate the numerical value of the area when $x = 1$



Activity (1): Terms and Algebraic

Choose a card containing an algebraic term and another containing an algebraic expression from the following, and find their product:

$2x$ $3a$
 $10 - 3y$ $-y$ $5x^2 - 1$ $a^2 - 3a + 1$

Homework:

Answer the following:

- Find: $(x^2y^2)(5x^2y)$
- Find: $3x(3x^2 + 3xy - 2)$
- Simplify in the simplest form:
 $2x(3x - 1) + 3x(x + 2)$

- 4) A triangle has a base of $(x^2 + 2x + 3)$ units of length and a height of $(3x)$ units of length. Find its area in terms of x .

Then find the numerical value of the area when $x = 3$

- 5) Simplify in the simplest form:

$$2m(m - 4) + 3m(2m + 1)$$

Then find the numerical value of the expression when $m = 2$

Weekly Assessment - week (4)

Model (A)

First: Choose the correct answer:

- 1) If: $x+2 < -3$, which of the following could be the value of x ?

a) -5

b) -4

c) -6

d) -3

- 2) $(3x^2)(4x^3) = \dots\dots\dots$

a) $12x^6$

b) $12x^5$

c) $12x$

d) $7x^5$

Second: Answer the following:

- 3) Find the solution to the following equation in Q :

$$2(x + 3) \leq 8$$

- 4) Find in the simplest form:

$$5ab(3ab^2 + 3b - 2a)$$

- 5) Simplify in the simplest form:

$$5x(x - 2) + 2x(3x + 4)$$

Then find the numerical value of the expression when $x = 1$

Model (B)

First: Choose the correct answer:

- 1) If: $x-2 < -3$, which of the following could be the value of x ?

a) -2

b) -1

c) 1

d) 3

2) $(4x^2)(4x^3) = \dots\dots\dots$

a) $8x^6$

b) $16x^5$

c) $16x^6$

d) $8x^5$

Second: Answer the following:

3) Find the solution to the following equation in Q:

$$3(x + 5) \leq 9$$

4) Find in the simplest form:

$$2xy(3xy^3 + 5x - 4y)$$

5) Simplify in the simplest form:

$$3x(x + 2) + x(3x + 5)$$

Then find the numerical value of the expression when $x = 2$

Model (C)

First: Choose the correct answer:1) If: $x+1 < -3$, which of the following could be the value of x?

a) -1

b) -4

c) -6

d) -3

2) $(5y^3)(3y^4) = \dots\dots\dots$

a) $15y^7$

b) $8y^7$

c) $15y^{12}$

d) $8y$

Second: Answer the following:

3) Find the solution to the following equation in Q:

$$4(x - 1) \leq 20$$

4) Find in the simplest form:

$$6ab(2a^2b^2 + 4b - a)$$

5) Simplify in the simplest form:

$$6a(a - 1) + 2a(3a + 2)$$

Then find the numerical value of the expression when $a = 3$

Unit (2)

Week (5)

Lesson (3): Multiplying algebraic expressions

Date: / /

Classroom Performance:

Activity (1): Green Garden

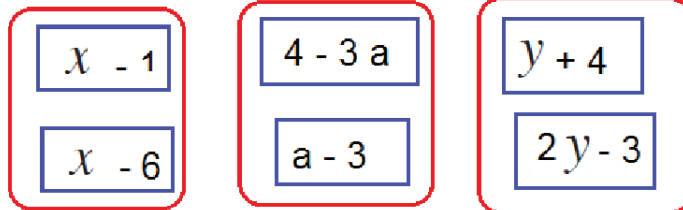
A rectangular garden with a length of $(2x + 3)$ meters and a width of $(x + 1)$. It needs to be covered with green grass. Calculate the area of the green grass.

(Assuming $x = 20$, work with your classmate to determine the area of grass required to cover the garden)



Activity (2): Choose and Find the Result

Choose one of the following sets of cards and find the product of the two algebraic expressions on them:



Homework:

Answer the following:

1) Find the product of:

$$(x + 1)(x - 6)$$

2) Find the Expansion:

$$(x - 5)^2$$

3) Find the product of:

$$\left(\frac{1}{2}a + 1\right)\left(\frac{1}{2}a - 1\right)$$

4) Find in simplest form: $(b - 2)(b + 2) - b(b + 1)$

5) Find in simplest form: $(2x - 1)(x^2 - 3x + 4)$

Unit (2)

Week (5)

Lesson (4): Dividing an
Algebraic Term or an Algebraic
Expression by an Algebraic Term

Date: / /

Classroom Performance:

Activity (1): School Classes

If the number of students in your school is $(15a^4 + 25a^3 + 20a^2)$ and the number of students in each class is $(5a)$

Find the number of classes in your school in terms of a



Homework:

Note: (in all cases the divisor does not equal zero)

1) Find the quotient of:

$$\frac{-12X^5Y^3}{-4X^2Y^2}$$

2) Find the quotient of:

$$\frac{-15X^3Y^3 + 25X^2Y^5 + 10X^4Y^6}{5X^2Y^3}$$

3) Simplify in the simplest form:

$$\frac{X^5}{X^5} + \frac{X^4}{X^2} + \frac{X^2}{-X^2}$$

Then find the numerical value of the product when $x = 2$

4) Find the quotient of: $(9a^4 - 6a^3 + 12a^2)$ divided by $(-3a)$

5) If the number of students in a school is $(16m^3 + 12m^2 + 20m)$, and the number of students in each class is $(4m)$, then what is the number of classes in the school in terms of m ?

Weekly Assessment - Week (5)

Model (A)

First: Choose the correct answer:1) If: $(2x+3)^2 = a x^2 + b x + c$, what is the value of b?

a) 12

b) 10

c) 9

d) 6

2) $(-36 x^4) \div (4 x^3) = \dots\dots\dots$ a) $9 x^7$ b) $-9 x$ c) $9 x$ d) $32x$ **Second: Answer the following:**

3) Find the product of:

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

4) Simplify in the simplest form:

$$(2a - 3b)^2 - (2a - 3b)(2a + 3b)$$

Then find the numerical value of the expression when $a = b = 2$

5) Find the quotient of:

$$\frac{3ab^2 + 9a^2b - 6a^2b^2}{3ab}$$

Model (B)

First: Choose the correct answer:1) If: $(5x+2)^2 = a x^2 + b x + c$, what is the value of b?

a) 7

b) 10

c) 20

d) 14

2) $(-25 x^4) \div (5 x^3) = \dots\dots\dots$ a) $5 x^7$ b) $-5 x$ c) $5 x$ d) $20 x$

Second: Answer the following:

3) Find the product of:

$$(3x + 1)(x - 5)$$

4) Simplify in the simplest form:

$$(x + 3y)^2 + (2x - 3y)(2x + 3y)$$

Then find the numerical value of the expression when $x = 2$ and $y = 1$

5) Find the quotient of:

$$\frac{25ab^2 + 10a^2b - 15a^2b^2}{5ab}$$

Model (C)

First: Choose the correct answer:1) If: $(3x+4)^2 = a x^2 + b x + c$, what is the value of b?

a) 12

b) 24

c) 14

d) 9

2) $(-18x^4) \div (2x^3) = \dots\dots\dots$ a) $9x^7$ b) $-9x$ c) $9x$ d) x **Second: Answer the following:**

3) Find the product of:

$$(4x + 3)(x - 2)$$

4) Simplify in the simplest form:

$$(2m + 3)^2 + (2m - 3)(2m + 3)$$

Then find the numerical value of the expression when $m = 2$

5) Find the quotient of:

$$\frac{8ab^2 + 16a^2b - 20a^2b^2}{4ab}$$

Unit (2)

Week (6)

Lesson (5) :Dividing
Algebraic Expressions

Date: / /

Classroom Performance:

Activity (1): juice boxes

A juice factory packs its products into rectangular boxes.

The volume is $(x^3 + 6x^2 + 11x + 6)$ cubic units.

The height is $(x + 2)$ length units.

Find the area of the base of the box.



Activity (2): Discover the Other Factor

Cooperate with your groupmates to find the quotient of the following algebraic expressions by completing the table:

Dividend	Divisor	Quotient
$X^3 + 2x^2 - 5x - 6$	$X - 2$	
$X^2 + 7x + 12$	$X + 3$	
$2y^2 - 1 + 8y^3 - 2y$	$2y + 1$	

Homework:

Note: (in all cases the divisor does not equal zero)

- 1) Find the quotient of: $(X^2 - 4X - 12)$ divided by $(X + 2)$ where $X \neq -2$
- 2) If $(2x + 1)$ is one factor of the expression $(2X^2 - 7X - 4)$, find the other factor.
- 3) If the expression $(4x^2 + 11x + b)$ is divisible by $(4x - 1)$, find the value of b
- 4) If the quotient of $(x^2 + 10x + k)$ divided by $(x + 7)$ is $(x + m)$, what is the value of $k + m$?
- 5) The floor area of a rectangular room is $(2x^3 - 5x^2 + 7x - 6)$ square units, and its width is $(x + 7)$ length units. Find the length of the floor in terms of x

Unit (3)

Week (6-7)

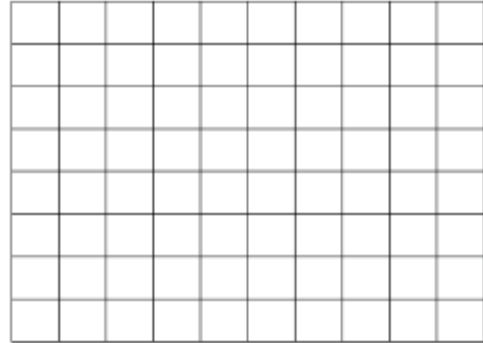
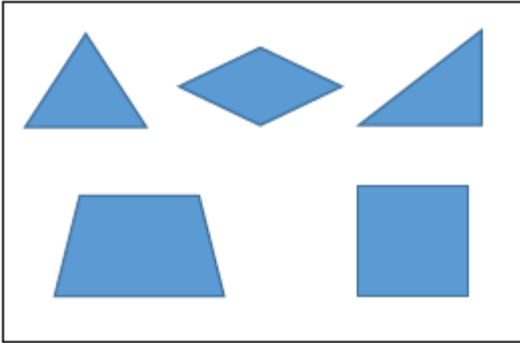
Lesson (1):
Areas

Date: / /

Classroom Performance:

Activity (1): Logo Design

Share your groupmates to design a logo for a company, organization, or sports club using the grid of squares using the geometric shapes shown:



Activity (2): Natural grass

Natural grass is a herbaceous plant used to cover surfaces and create natural green spaces in gardens and homes. It is characterized by its aesthetic appearance, which creates a sense of calm and relaxation. It also helps improve air quality by absorbing dust and generating oxygen.



Natural grass requires constant maintenance through watering, pruning, and fertilizing.

If we have a rectangular plot of land measuring 10 meters long and 8 meters wide and we want to cover it with natural grass, and the cost of one meter of natural grass is 50 Egyptian pounds, what will be the total cost?

Homework:

Answer the following:

- 1) Find the surface area of a rhombus whose diagonals are 12 cm and 10 cm.
- 2) A rhombus has a surface area of 96 square feet. If the length of one of its diagonals is 16 feet, find the length of the other diagonal.
- 3) Find the surface area of a square whose diagonal length is 12 cm.
- 4) Find the length of the diagonal of a square whose surface area is equal to the surface area of a rectangle with a length of 10 cm and a width of 7.2 cm.
- 5) Find the surface area of a trapezium whose parallel bases are 6 cm and 8 cm long and whose height is 4 cm.

Weekly Assessment - Week (6) and Week (7)

Model (A)

First: Choose the correct answer:

- 1) What is the quotient of $(2x^2 - 7x + 5)$ divided by $(2x - 5)$?

a) $x - 1$	b) $x + 1$	c) $x + 5$	d) x
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- 2) If the product of two diagonals lengths of a rhombus is 100 square units, then its surface area is equal to square units.

a) 200	b) 50	c) 25	d) 10
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Second: Answer the following:

- 3) Find the quotient of: $(X^2 + 9X + 20)$ divided by $(X + 4)$ where $X \neq -4$
- 4) Find the surface area of a rhombus whose diagonals lengths are 12 cm and 10 cm.
- 5) Find the length of the diagonal of a square whose area is equal to the area of a rhombus whose diagonals lengths are 8.1 cm and 10 cm.

Model (B)

First: Choose the correct answer:

- 1) What is the quotient of $(x^2 - 12x + 20)$ divided by $(x - 2)$?
- a) $x - 4$ b) $x + 4$ c) $x - 10$ d) x
- 2) If the product of the two diagonals lengths of a rhombus is 50 square units, then its surface area is equal to square units.
- a) 200 b) 50 c) 25 d) 10

Second: Answer the following:

- 3) Find the quotient of: $(X^2 + 5X + 6)$ divided by $(X + 3)$ where $X \neq -3$
- 4) Find the surface area of a rhombus whose two diagonals lengths are 8 cm and 10 cm.
- 5) Find the length of the diagonal of a square whose area is equal to the area of a rhombus whose diagonals lengths are 12.5 cm and 8 cm.

Model (C)

First: Choose the correct answer:

- 1) If the product of the two diagonals lengths of a rhombus is 200 square units, then its surface area is equal to square units.
- a) 400 b) 100 c) 25 d) 50
- 2) What is the quotient of $(x^2 + 12x + 35)$ divided by $(x + 5)$?
- a) $x - 7$ b) $x - 5$ c) $x + 7$ d) $7 - x$

Second: Answer the following:

- 3) Find the quotient of: $(X^2 + 8X + 15)$ divided by $(X + 4)$ where $X \neq -4$
- 4) Find the surface area of a rhombus whose two diagonals lengths are 12 cm and 16 cm.
- 5) Find the length of the diagonal of a square whose area is equal to the area of a rhombus whose diagonals lengths are 6.4 cm and 10 cm.

End of the first month exercises

First: Choose the correct answer:

- 1) Which of the following is equivalent to $-x \leq -2$?
 a) $-x \geq -2$ b) $x \geq -2$ c) $-x \leq 2$ d) $x \geq 2$
- 2) $x(x+2) = \dots\dots\dots$
 a) $x^2 + 2$ b) $x^2 + 2x$ c) $x + 2x$ d) $x^3 + 2x^2$
- 3) If the lengths of two diagonals of a rhombus are 8 cm and 10 cm. then Its area is square centimeters.
 a) 80 b) 160 c) 40 d) 18
- 4) If : $(x-3)(x+3) = x^2 - k$, What is the value of k?
 a) 3 b) 9 c) 0 d) 6
- 5) $(x^2 + x) \div x = \dots\dots\dots$
 a) x b) $x + 1$ c) 0 d) $2x + 1$
- 6) Which of the following is equal to 0.0000052?
 a) 5.2×10^5 b) 5.2×10^{-6} c) 5.2×10^6 d) 5.2×10^{-5}
- 7) A rhombus has a side length of 10 cm, and the lengths of its two diagonals are 12 cm and 16 cm. Its height = cm.
 a) 96 b) 10 c) 9.6 d) 6.9
- 8) The multiplicative inverse of $\sqrt{\frac{25}{16}}$ is
 a) $\frac{-5}{4}$ b) $\frac{4}{5}$ c) $\frac{-4}{5}$ d) $\frac{5}{4}$
- 9) The area of a square whose its diagonal 12 cm is square centimeters.
 a) 36 b) 72 c) 144 d) 180
- 10) If: $x^3 = -27$, what is the value of x?
 a) 3 b) -3 c) -9 d) ± 3

11) If: $2^4 \times a = 2^{20}$, what is the value of a?

- a) 2^{16} b) 2^{24} c) 2^5 d) 2

12) If: $2.5 \times 10^n = 0.000025$, what is the value of n?

- a) -5 b) 4 c) -4 d) 5

Second: Answer the following:

- 1) Find the solution set of the following inequality in N: $2x-3 \leq 1$
- 2) Find the solution set of the following inequality in Z: $4 - 2x < -6$
- 3) Calculate the area of a rectangle whose length is 5 units greater than its width, and whose width is equal to x units of length.
- 4) If the area of a rectangle is $(4x^4 + 8x^3 + 12x^2)$ square units, and the length of one of its dimensions is $(4x^2)$ units of length, find the length of the other dimension in terms of x.
- 5) Simplify in the simplest form: $\frac{6x^3(3x^2 - 6x - 9)}{9x^2}$, Then find the numerical value of the result when $x = 1$
- 6) Find in simplest form: $(3x - 2)(x^2 - 2x + 5)$
- 7) Which has a larger area: a rhombus whose diagonals lengths are 6 cm and 8 cm or a square whose diagonal length is 8 cm?
- 8) Find the length of diagonal of a square whose area is equal to the area of a rhombus whose diagonals lengths are 4 meters and 25 meters.
- 9) Simplify in the simplest form: $(x + 2)^2 - x(x + 4)$
- 10) Find the quotient of: $(X^2 + 9X + 20)$ divided by $(X + 4)$ where $X \neq -4$
- 11) Find in simplest form: $\sqrt{\frac{81}{49}} + \left(\frac{3}{4}\right)^0 + \sqrt[3]{\frac{125}{343}}$
- 12) Find in simplest form: $\frac{(-3)^5 \times (-3)^6}{(-3)^3 \times (-3)^5}$
- 13) If $(2x - 1)$ is one factor of the expression $(2X^2 + 7X - 4)$, find the other factor.

14) Find the value of x in each of the following:

1) $2x^2 - 5 = 13$

2) $3x^3 + 15 = 96$

15) Write the result of the following in scientific notation:

$$(4.5 \times 10^7) \times (4 \times 10^8)$$

16) Find the solution set of the inequality:

$$5x + 6 \leq 4x + 2 \quad (x \in \mathbb{Q})$$

17) Find in simplest form:

$$\frac{4x^5}{x^5} + \frac{x^4}{x^3} + \frac{x^3}{-x^3}$$

18) If the expression $(x^3 - x^2 - 4x - m)$ is divisible by $(x - 3)$, find the value of m

Unit (3)

Week (8)

Lesson (3)
Geometrical
Constructions

Date: / /

Classroom Performance:

Activity (1): Geometrical Applications

Geometrical tools are used in many applications.

Who can name some of these applications?



Activity (2): Home Garden Planning

Share your groupmates in:

- Plant a fruit tree in the middle of one side of the garden.
- Create a straight footpath perpendicular to the other side, passing through its middle to ensure symmetry and balance in the design.



(Hint: You must establish an axis of symmetry for a straight line)

Homework:

Answer the following:

- 1) Using geometrical tools, draw an angle $\angle BAC$ measuring 100° , bisect it by \overline{BD} , and then use a protractor to make sure that: $m(\angle ABD) = m(\angle CBD)$.
- 2) Draw a straight line \overline{AB} 8 cm long, then bisect it using the geometrical tools at C. Then, use a ruler to make sure that C is at the midpoint of \overline{AB} .

- 3) Draw $\triangle ABC$ where the length of \overline{AB} equals 6 cm, $m(\angle A) = 60^\circ$ and $m(\angle B) = 70^\circ$, then use the protractor to find the measure of third angle of the triangle.
- 4) Draw $\triangle ABC$ where $AB = 3$ cm, $CB = 4$ cm and $AC = 5$ cm, then bisect \overline{AC} at D , and then join D by B , Using a ruler to find the length of \overline{BD} , What do you notice?
- 5) Draw $\triangle ABC$ where $AB = 5$ cm, $AC = 7$ cm, and $m(\angle B A C) = 75^\circ$, Determine the type of triangle according to the measures of its angles.

Unit (3)

Week (9)

Lesson (3)
Geometrical
Transformations

Date: / /

Classroom Performance:

Activity (1): Notice and Write

Look at the following picture:
Write your notes in cooperation
with your classmate, then the
teacher will discuss these notes.



Activity (2): Transformations journey

Determine the type of geometric transformation in each of:

Original

Image



Original

Image



Original

Image



Homework:

Answer the following:

Draw the triangle whose vertices are A(1, 2), B(4, 5), C(5, 1), then find:

- 1) Its image by reflection in the x-axis
- 2) Its image by reflection in the y-axis

Draw the triangle whose vertices are $A(-1, 2)$, $B(4, 2)$, $C(4, 5)$, then find:

- 3) Its image by reflection in the x -axis
- 4) Its image by reflection in the y -axis
- 5) Draw the triangle whose vertices are $A(-1, 2)$, $B(3, 1)$, $C(0, 4)$, then find:
Its image by reflection in the x -axis.

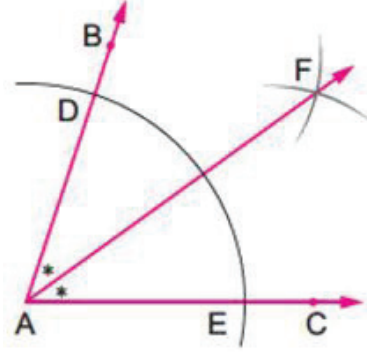
Weekly Assessment - Week (9)

Model (A)

First: Choose the correct answer:

- 1) In the opposite figure:
Bisected $\angle B A C$ using compass and ruler,
by

- a) \overrightarrow{AF} b) \overrightarrow{AE}
c) \overrightarrow{AB} d) \overrightarrow{AD}



- 2) The image of $(-1, 4)$ by reflection in the x-axis
is

- a) $(4, 1)$ b) $(4, -1)$ c) $(1, 4)$ d) $(-1, -4)$

Second: Answer the following:

- 3) Using geometrical tools, draw an angle $\angle ABC$ measuring 150° , then bisect it by \overrightarrow{BD} , and then use a protractor to make sure that:
 $m(\angle ABD) = m(\angle CBD)$.
- 4) Draw the triangle ABC whose vertices are $A(0, 3)$, $B(4, 0)$, $C(4, 5)$, then find:
Its image by reflection in the x-axis
- 5) Draw $\triangle ABC$ where $AB = 8$ cm, $m(\angle A) = 60^\circ$, and $m(\angle B) = 30^\circ$, then using a protractor, find the measure of the third angle of the triangle.

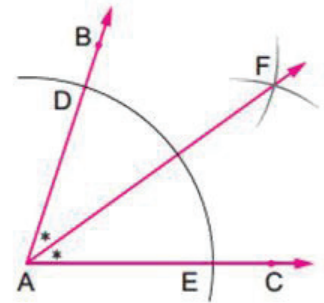
Model (B)

First: Choose the correct answer:

- 1) In the opposite figure:
When Bisecting $\angle BAC$ using a compass
and a ruler, we find that: $m(\angle BAF) =$

.....

- a) $m(\angle BAC)$ b) $2m(\angle BAC)$
c) $m(\angle EAF)$ d) $\frac{1}{2}m(\angle BAC)$



- 2) The image of $(4, 1)$ by reflection in the x-axis is

- a) $(4, 1)$ b) $(4, -1)$ c) $(-1, 4)$ d) $(-1, -4)$

Second: Answer the following:

- 3) Using geometrical tools, draw an angle $\angle ABC$ measuring 110° , then bisect it by \overline{BD} , and then use a protractor to make sure that:
 $m(\angle ABD) = m(\angle CBD)$.
- 4) Draw the triangle ABC whose vertices are $A(0, 3)$, $B(4, 0)$, $C(4, 5)$, then find:
Its image by reflection in the y-axis
- 5) Draw $\triangle ABC$ where $AB = 4$ cm, $m(\angle A) = 30^\circ$, and $m(\angle B) = 60^\circ$, then using a protractor, find the measure of the third angle of the triangle.

Model (C)

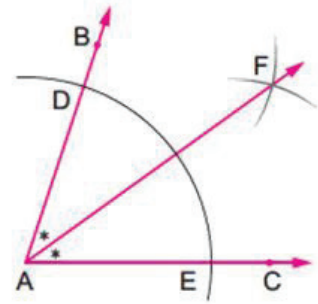
First: Choose the correct answer:

1) In the opposite figure:

When Bisecting $\angle BAC$ using a compass and a ruler, we find that: $m(\angle BAF) =$

.....

- a) $m(\angle BAC)$ b) $2m(\angle BAC)$
 c) $m(\angle EAF)$ d) $\frac{1}{4}m(\angle BAC)$



2) The image of (1, 4) by reflection in the y-axis is

- a) (4, 1) b) (4, -1) c) (-1, 4) d) (-1, -4)

Second: Answer the following:

- 3) Using geometrical tools, draw an angle $\angle ABC$ measuring 130° , then bisect it by \overline{BD} , and then use a protractor to make sure that: $m(\angle ABD) = m(\angle CBD)$.
- 4) Draw the triangle ABC whose vertices are A(0, 4), B(3, 0), C(3, 5), then find:
Its image by reflection in the x-axis
- 5) Draw $\triangle ABC$ where $AB = 5$ cm, $m(\angle A) = 50^\circ$, and $m(\angle B) = 40^\circ$, then using a protractor, find the measure of the third angle of the triangle.

Unit (3)

Week (10)

Continue Lesson (3)
Geometrical Transformations
(Translation and Rotation)

Date: / /

Classroom Performance:

Activity (1): Shapes in our lives

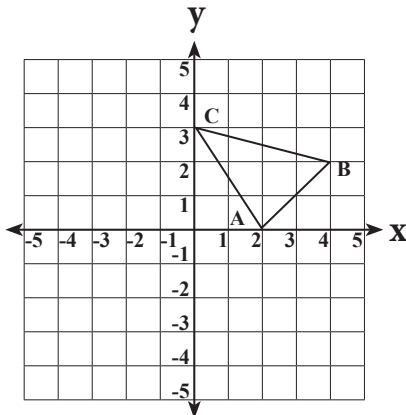
Look at the following picture and write your notes in cooperation with your classmate.



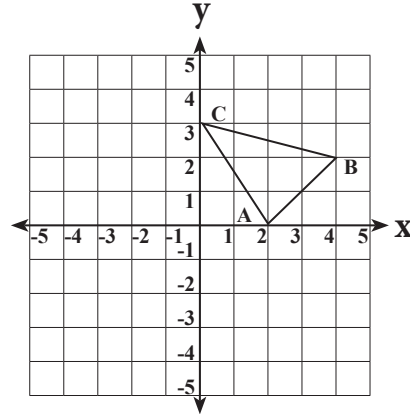
Activity (1): draw an image

Draw an image of each of the following shapes according to the geometric transformation shown, then describe its type:

$$(x, y) \rightarrow (x - 4, y + 1)$$



$$(x, y) \rightarrow (-x, -y)$$



Homework:

Answer the following:

Draw the triangle ABC whose vertices are A(1, 2), B(4, 5), C(5, 1), then find:

- 1) Its image by the translation $(3, 2)$
- 2) Its image by the rotation $R(O, 180^\circ)$

Draw the triangle ABC whose vertices are A(-1, 2), B(4, 2), C(4, 5), then find:

- 3) Its image by the translation $(3, 2)$
- 4) Its image by the translation of 3 units to the right.
- 5) Draw the triangle ABC whose vertices are A(-1, 2), B(3, 1), C(0, 4), then find: Its image by rotation $R(O, 90^\circ)$

Weekly Assessment - Week (10)

Model (A)

First: Choose the correct answer:1) The image of $(4, 2)$ by the rotation $R(O, 90^\circ)$?

- a) $(4, -2)$ b) $(-2, 4)$ c) $(-4, -2)$ d) $(-4, 2)$

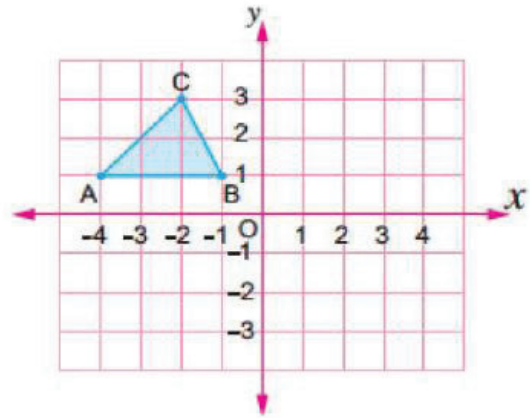
2) The point $(2, 5)$ is an image of $(3, 2)$ by the translation

- a) $(3, -1)$ b) $(-3, 1)$ c) $(1, 3)$ d) $(1, -3)$

Second: Answer the following:

Draw the image of the following triangle by:

- 3) Rotation $R(O, 180^\circ)$
4) Translation $(2, 0)$
5) Rotation $R(O, 90^\circ)$



Model (B)

First: Choose the correct answer:1) The image of $(4, 5)$ by the rotation $R(O, 90^\circ)$?

- a) $(4, -5)$ b) $(-5, 4)$ c) $(-4, -5)$ d) $(-4, 5)$

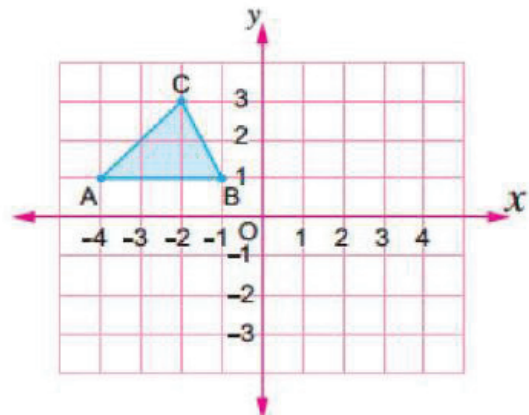
2) The point $(2, 5)$ is an image of $(-1, 6)$ by the translation

- a) $(3, -1)$ b) $(-3, 1)$ c) $(1, 3)$ d) $(1, -3)$

Second: Answer the following:

Draw the image of the following triangle by:

- 3) Rotation $R(O, 90^\circ)$
4) Translation $(0, 2)$
5) Rotation $R(O, -180^\circ)$



Model (C)

First: Choose the correct answer:1) The image of $(4, 7)$ by the rotation $R(O, 90^\circ)$?

- a) $(4, -7)$ b) $(-7, 4)$ c) $(-4, -7)$ d) $(-4, 7)$

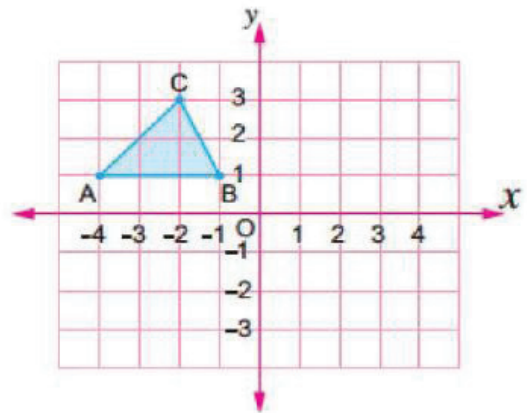
2) The point $(2, 5)$ is an image of $(5, 4)$ by the translation

- a) $(3, -1)$ b) $(-3, 1)$ c) $(1, 3)$ d) $(1, -3)$

Second: Answer the following:

Draw the image of the following triangle by:

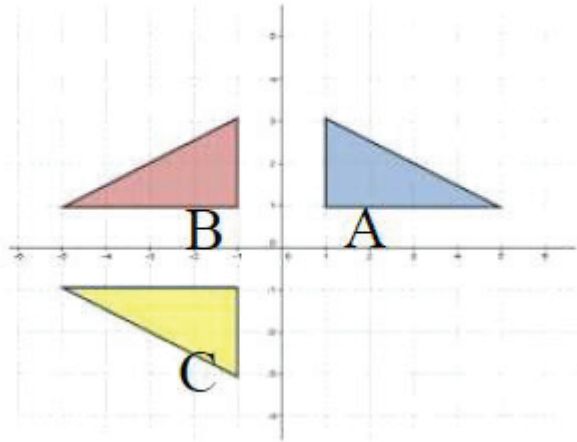
- 3) Rotation $R(O, 90^\circ)$
 4) Translation $(0, 3)$
 5) Rotation $R(O, 180^\circ)$



Classroom Performance:

Activity (1): Note and complete

Notice the following picture and write your observations in cooperation with the classmate. The teacher will then discuss these observations and ask the following questions:



Triangle A is an image of triangle B by

Triangle C is an image of triangle by reflection in the x-axis

Triangle A is an image of triangle C by reflection in the-axis

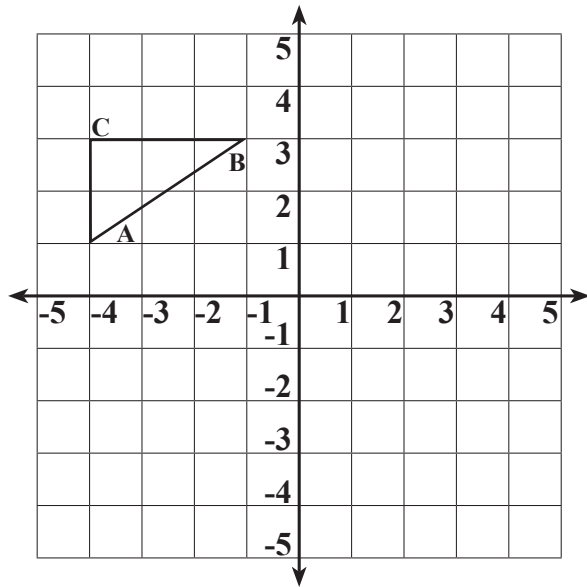
Followed by reflection in the-axis

Activity (2): Moves Shapes

In your groupmates:

Move the shape to a new position on the square paper (e.g., 3 units to the right, 2 units down).

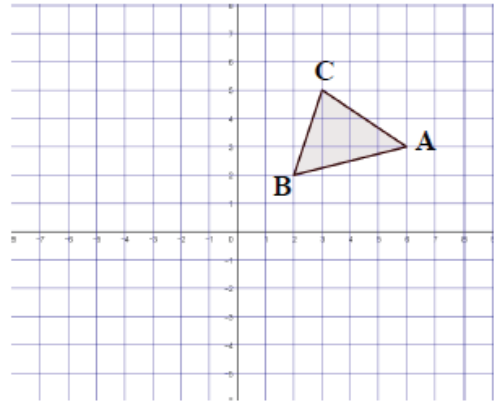
- Reflect the opposite shape about the x- or y-axis.
- Rotate the opposite shape by 90° , 180° , or 270° about the original point.



Homework:

Answer the following:

- 1) Draw the image of triangle ABC by reflection in the x-axis followed by reflection in the y-axis.
- 2) Draw the image of triangle ABC by the translation $(2, 1)$ followed by translation $(-2, -1)$
- 3) Draw the image of triangle ABC by the rotation $R(0, 90^\circ)$ followed by rotation $R(0, 180^\circ)$.
- 4) Find the images of the point $(1, -5)$ by the reflection in the y-axis followed by reflection in the x-axis.
- 5) Find the images of the point $(1, -5)$ by:
First: Translation $(3, 0)$ followed by translation $(4, -1)$
Second: Rotation $R(0, -90^\circ)$ followed by Rotation $R(0, 270^\circ)$



Weekly Assessment - Week (11)

Model (A)

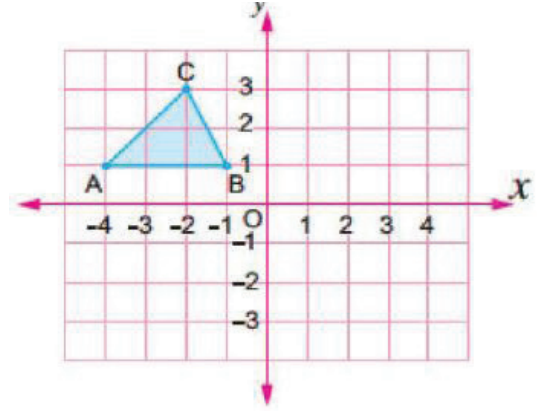
First: Choose the correct answer:

- 1) The image of the point $(2, 3)$ by the reflection in the x-axis followed by reflection in the y-axis is
a) $(-2, 3)$ b) $(-2, -3)$ c) $(2, -3)$ d) $(2, 3)$
- 2) The image of the point $(-1, 2)$ by the translation $(1, -1)$ followed by the translation $(2, 1)$ is
a) $(2, -2)$ b) $(2, 2)$ c) $(1, 2)$ d) $(2, -1)$

Second: Answer the following:

Draw the image of the following triangle by:

- 3) Reflection in the y-axis followed by reflection in the x-axis
- 4) Reflection in the x-axis followed by reflection in the y-axis
- 5) Rotation $R(O, -90^\circ)$ followed by rotation $R(O, 180^\circ)$



(5) أوجد صور النقطة $(-2, 0)$

أولاً : بالانتقال $(-3, 1)$ متبوعاً بالانتقال $(0, -2)$

ثانياً : بالانتقال $R(O, 90^\circ)$ متبوعاً بالانتقال $R(O, 270^\circ)$

Model (B)

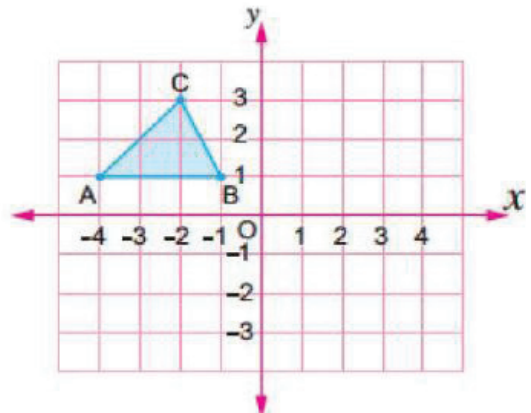
First: Choose the correct answer:

- 1) The image of the point $(3, 2)$ by the reflection in the x-axis followed by reflection in the y-axis is
 - a) $(-3, -2)$
 - b) $(-3, 2)$
 - c) $(3, -2)$
 - d) $(3, 2)$
- 2) The image of the point $(-1, 2)$ by the translation $(2, -1)$ followed by the translation $(1, 2)$ is
 - a) $(3, -2)$
 - b) $(3, 2)$
 - c) $(2, 3)$
 - d) $(2, -3)$

Second: Answer the following:

Draw the image of the following triangle by:

- 3) Reflection in the x-axis followed by reflection in the y-axis



- 4) Reflection in the y-axis followed by reflection in the x-axis
 5) Rotation $R(O, 90^0)$ followed by rotation $R(O, 180^0)$

(5) أوجد صور النقطة $(-2, 1)$

أولاً : بالانتقال $(-4, 1)$ متبوعاً بالانتقال $(0, -3)$

ثانياً : بالانتقال $R(O, 270)$ متبوعاً بالانتقال $R(O, 90)$

Model (C)

First: Choose the correct answer:

- 1) The image of the point $(4, 1)$ by the reflection in the x-axis followed by reflection in the y-axis is

a) $(-4, -1)$ b) $(-4, 1)$ c) $(1, -4)$ d) $(1, 4)$

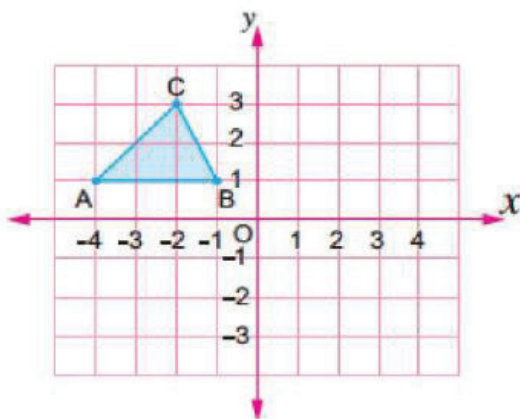
- 2) The image of the point $(-3, 1)$ by the translation $(1, -1)$ followed by the translation $(2, 1)$ is

a) $(-1, 0)$ b) $(0, -1)$ c) $(0, 1)$ d) $(1, 0)$

Second: Answer the following:

Draw the image of the following triangle by:

- 3) Reflection in the y-axis followed by reflection in the x-axis
 4) Reflection in the x-axis followed by reflection in the y-axis
 5) Rotation $R(O, 180^0)$ followed by rotation $R(O, 90^0)$



(5) أوجد صور النقطة $(-3, 1)$

أولاً : بالانتقال $(-3, 1)$ متبوعاً بالانتقال $(0, -2)$

ثانياً : بالانتقال $R(O, 90)$ متبوعاً بالانتقال $R(O, 270)$

Unit (4)

Week (12)

Lesson (1): Random
Experiment – Sample
Space – Events

Date: / /

Classroom Performance:

Activity (1): Handball

The opposite figure shows two bags containing identical balls: one has balls of different colors (2 red, 2 blue and 2 green). The other has all balls of blue color.



In cooperation with your groupmates, write your notes on the following:

If a ball is drawn at random from the first bag:

- (1) Do you know its color before and after the draw?
- (2) What are all the possible color choices for the drawn ball?
- (3) Can a white ball be drawn ?
- (4) Can a red, blue, or green ball be drawn ?

If you draw a ball at random from the second bag, do you know its color before and after drawing?

Activity (2): Cards

Collaborate with your groupmates to prepare cards numbered 1 to 10, then answer the following questions:

- Use these cards to conduct a random experiment and describe it.
- Write the sample space for this random experiment.
- Identify one certain event and one impossible event for this random experiment.

Homework:

Answer the following:

- 1) Determine which of the following experiments are random and which are not, then write the sample space for each of the random experiments, indicating the number of its elements:
 - (1) In the experiment of tossing a fair coin 3 times in successively and observing the sequence of appearances of heads and tails.
 - (2) Choose a digit of the number 3253 randomly.
 - (3) Drew one of 10 identical cards and observe the number written on them. All of them have the number 9 written on them.

- 2) In the experiment of tossing a fair die is rolled once and the number appearing on the upper, write the sample space (S). Find each of the following events, indicating the type of it (simple, certain, impossible):
 - (1) A is the event of obtaining an odd number.
 - (2) B is the event of obtaining a number greater than 4
 - (3) C is the event of obtaining the number 3
 - (4) D is the event of obtaining a number less than 7
 - (5) E is the event of obtaining the number 6
 - (6) F is the event of getting a number that satisfies: $x \geq 2$

- 3) If has an identical cards is drawn at random from 20 to 29 and the number on the drawn card is recorded, find each of the following events:
 - (1) A is the event of obtaining a number greater than 25
 - (2) B is the event of obtaining a number less than 20
 - (3) C is the event of obtaining a prime number.
 - (4) D is the event of obtaining an even number.

- 4) In the experiment of tossing a fair coin twice in successively and observing the sequence of appearances of heads and tails, write the sample space (S) and then express each of the following events:
 - (1) A is the event of "appearance of a head on the first toss"
 - (2) B is the event of "appearance of a tail on the first toss"
 - (3) C is the event of "no heads appear"
 - (4) D is the event of "appearance of the same outcome on both tosses"

- 5) In the experiment of rolling a fair die twice successively, and observing the number that appears on the upper face, write the following events:
- (1) A is the event of "appearance of the number 3 on the first roll"
 - (2) B is the event of "appearance of two numbers whose sum is 9"
 - (3) C is the event of "appearance of the same outcome on the second roll"
 - (4) D is the event of "appearance of the same number on both tosses"

End of the second month exercises**First: Choose the correct answer:**

- 1) The image of point $(3, 2)$ by the Rotation $R(O, 90^\circ)$?
a) $(3, -2)$ b) $(-2, 3)$ c) $(-3, -2)$ d) $(-3, 2)$
- 2) The image of the point $(1, -3)$ by the translation of 3 units down is
a) $(4, -3)$ b) $(1, -6)$ c) $(-2, 3)$ d) $(-2, -3)$
- 3) The image of the point $(-1, 5)$ by the translation $(3, -1)$ is
a) $(-2, 4)$ b) $(2, -4)$ c) $(2, 4)$ d) $(-1, -6)$
- 4) Which of the following points has its own image reflected in the x-axis?
a) $(4, 0)$ b) $(0, -6)$ c) $(-2, 2)$ d) $(-3, -3)$
- 5) The image of the point $(3, 4)$ by the reflection in the x-axis followed by reflection in the y-axis is
a) $(4, -3)$ b) $(-3, -4)$ c) $(4, 3)$ d) $(3, 4)$
- 6) The image of the point $(-2, 5)$ by the rotation around the origin by an angle of measure 90° degrees followed by the rotation $R(O, 180^\circ)$ is
a) $(2, 5)$ b) $(-5, -2)$ c) $(-2, -5)$ d) $(-2, 5)$
- 7) The image of the point $(3, 4)$ by the reflection in the x-axis is
a) $(4, -3)$ b) $(-3, -4)$ c) $(4, 3)$ d) $(3, -4)$

- 8) The sample space for the experiment of randomly choosing one of the numbers in the number 3344 is:
- a) { 4 , 5 } b) { 4 , 3 } c) { 3 } d) { 4 }
- 9) The point (3, 5) is an image of the point (-1, 6) by the translation
- a) (4 , - 1) b) (- 4 , 1) c) (1 , 4) d) (1 , - 4)

Second: Answer the following:

- 1) Draw the equilateral triangle ABC whose side length is 5 cm.
- 2) Draw $\triangle ABC$ where $BC = 5$ cm, $m(\angle C) = 38^\circ$, and $m(\angle B) = 42^\circ$
- 3) Draw $\triangle ABC$ where $AB = AC = 4$ cm, $m(\angle BAC) = 60^\circ$
- 4) Find the image of the point (0, 3) by the reflection in the x-axis.
- 5) If (-5, 0) is the image of (-5, 0), determine whether the reflection is in X-axis or Y-axis.
- 6) Find the image of point (5, 3) by the rotation $R(0, 90^\circ)$
- 7) Find the image of point (-2, 1) by the rotation $R(0, -90^\circ)$
- 8) Draw triangle ABC where $A(-1, 2)$, $B(3, 1)$ and $C(3, 4)$. Then, draw its image by the rotation $R(0, -270^\circ)$
- 9) Draw triangle ABC where $A(-1, 2)$, $B(3, 1)$ and $C(3, 4)$. Then, draw its image by the translation (1, -2)
- 10) Draw triangle ABC where $A(-1, 1)$, $B(3, 1)$ and $C(3, 4)$. Then, draw its image by the translation $(x + 4, y - 1)$
- 11) Draw an angle measuring 80° , then bisect it using a ruler and compass.
- 12) Draw \overline{AB} its length is 6 cm and bisect it using a ruler and compass, and make sure of it by measuring.

Unit (3)

Week (13)

Lesson (2): Theoretical &
Experimental Probability

Date: / /

Classroom Performance:

Activity (1): Basketball

Cooperate with your groupmates to help the basketball coach decide between Hussein and Emad!

If Hussein makes 30 out of 40 shots, Emad makes 20 out of 30



Activity (2): Even and Odd

Cooperate with your groupmates to prepare a die, then each member of the group a fair it once.

Find the probability of:

- Getting an even number.
- Getting an odd number.

If you roll a die 50 times, discuss with your classmates the answers to the previous questions based on the results of the random experiment you conducted.

Homework:

Answer the following:

- 1) If has an identical cards is drawn at random from 15 to 29 and the number on the drawn card is recorded, find each of the following events:
 - (1) A an event occurred where an odd number greater than 25 appeared.
 - (2) B an even number less than 20 appeared.
 - (3) C a prime number appeared.
 - (4) D a perfect square number appeared.

- 2) From the set of numbers $\{1, 2, 3\}$, create a number with two different digits. Choose one of these numbers at random.
Find the probability of each of the following events:
- (1) A number happened odd.
 - (2) B the sum of the two numbers is even.
 - (3) C the two numbers are equal.
- 3) A classroom has 40 students. 15 play football, 6 play basketball, and 10 play handball. One of the students was chosen at random.
Find the probability that the student is:
- (1) They are playing football.
 - (2) They do not engage in any sporting activity.
 - (3) They don't play basketball.
 - (4) They play basketball or handball.
- 4) When a colored ball was drawn from a bag containing three identical balls, red, green, and blue, the percentage of times the ball was drawn was as shown in the following table:

Color	Red	Green	Blue
Number of withdrawals	32%	33%	35%

- (1) Find the experimental probability of drawing a red ball.
- (2) Find the theoretical probability of drawing a green ball.
- (3) Find the number of times the blue ball is drawn, if the experiment is carried out 150 times.

Weekly Assessment - Week (13)

Model (A)

First: Choose the correct answer:

- 1) In an experiment of rolling a fair die once, and observing the number written on the upper face, the probability of getting an even number divisible by 3 is:

a) $\frac{1}{2}$

b) $\frac{1}{3}$

c) $\frac{1}{6}$

d) $\frac{2}{3}$

- 2) If A is an event from a random experiment with equal chances of occurrence, and the probability of event A = 30% and the number of elements in the sample space is 60, then the number of elements in event A =
- a) 18 b) 12 c) 9 d) 6

Second: Answer the following:

- 3) If a card is randomly drawn from identical cards numbered from 10 to 19 and the number written on it is noted, find the probability of each of the following events:
- (1) A an odd number appeared.
 - (2) B a prime number appeared.
 - (3) C a number > 19 appeared.
- 4) A box contains 8 red balls, 4 blue balls, and 12 green balls, all identical. A ball is drawn at random. Find the probability that the drawn ball is:
- (1) White.
 - (2) Blue.
 - (3) Not green.
 - (4) Red or white.
- 5) A fair die of 200 was thrown once, and the number written on the upper surface was observed. The results of the numbers appearing were as follows:

Number	1	2	3	4	5	6
Number of appearances	15 %	19 %	17 %	15 %	18 %	16 %

- (1) Find the experimental probability of the number 4 appearing.
- (2) Find the theoretical probability of the number 2 appearing.
- (3) Find the number of times the number 6 appears.

Model (B)

First: Choose the correct answer:

- 1) In an experiment of rolling a fair die once, and observing the number written on the upper surface, the probability of getting an even number > 3 is:

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{6}$ d) $\frac{2}{3}$

- 2) If A is an event from a random experiment with equal chances of occurrence, and the probability of event A is 20% and the number of elements in the sample space is 60, then the number of elements in event A is
- a) 18 b) 12 c) 9 d) 6

Second: Answer the following:

- 3) If a card is randomly drawn from identical cards numbered from 10 to 19 and the number written on it is noted, find the probability of each of the following events:
- (1) A an even number appeared.
 - (2) B a prime number appeared.
 - (3) C a number > 10 appeared.
- 4) A box contains 4 red balls, 8 blue balls, and 12 green balls, all identical.
A ball is drawn at random. Find the probability that the drawn ball is:
- (5) White.
 - (6) Blue.
 - (7) Not green.
 - (8) Red or white.
- 5) A fair die of 200 was thrown once, and the number written on the upper surface was observed. The results of the numbers appearing were as follows:

Number	1	2	3	4	5	6
Number of appearances	15 %	19 %	17 %	15 %	18 %	16 %

- (4) Find the experimental probability of the number 3 appearing.
- (5) Find the theoretical probability of the number 5 appearing.
- (6) Find the number of times the number 2 appears.

Model (B)

First: Choose the correct answer:

- 1) In an experiment of rolling a fair die once, and observing the number written on the upper surface, the probability of getting an even number > 3 is:
 - a) $\frac{1}{2}$
 - b) $\frac{1}{3}$
 - c) $\frac{1}{6}$
 - d) $\frac{2}{3}$
- 2) If A is an event from a random experiment with equal chances of occurrence, and the probability of event A is 10% and the number of elements in the sample space is 60, then the number of elements in event A is
 - a) 18
 - b) 12
 - c) 9
 - d) 6

Second: Answer the following:

- 3) If a card is randomly drawn from identical cards numbered from 1 to 10 and the number written on it is noted, find the probability of each of the following events:
 - (4) A an even number appeared.
 - (5) B a prime number appeared.
 - (6) C a number > 10 appeared.
- 4) A box contains 12 red balls, 4 blue balls, and 8 green balls, all identical.
A ball is drawn at random. Find the probability that the drawn ball is:
 - (1) White.
 - (2) Blue.
 - (3) Not green.
 - (4) Red or white.
- 5) A fair die of 200 was thrown once, and the number written on the upper surface was observed. The results of the numbers appearing were as follows:

Number	1	2	3	4	5	6
Number of appearances	15 %	19 %	17 %	15 %	18 %	16 %

- (1) Find the experimental probability of the number 5 appearing.
- (2) Find the theoretical probability of the number 6 appearing.
- (3) Find the number of times the number 3 appears.

General Revision

First: Choose the correct answer:

1) Which of the following is equal to $(-2)^3$

- a) 6 b) 8 c) -6 d) -8

2) If : $(x - 3)(x + 3) = x^2 - k$, What is the value of k ?

- a) 3 b) 9 c) 0 d) 6

3) A rhombus has diagonals of length 6 cm and 10 cm. What is its area?
..... square centimeters.

- a) 60 b) 120 c) 30 d) 16

4) If : $2.5 \times 10^n = 0.000025$, What is the value of n ?

- a) -5 b) 4 c) -4 d) 5

5) If $\sqrt{25} = \sqrt[3]{a}$, what is the value of a ?

- a) 5 b) 125 c) -5 d) 25

6) $(3x^2)(4x^3) = \dots\dots\dots$

- a) $12x^6$ b) $12x^5$ c) $12x$ d) $7x^5$

7) A trapezium has parallel bases of lengths 8 cm and 12 cm and a height of 6 cm. Its area is cm^2

- a) 120 b) 60 c) 84 d) 26

8) $\frac{5x^2+10x}{5x} = \dots\dots\dots$

- a) $x^3 + 2x^2$ b) $3x^2$ c) $-x$ d) $x + 2$

9) What is the image of point (3, 2) by rotation $R(O, 90^\circ)$?

- a) (3, -2) b) (-2, 3) c) (-3, -2) d) (-3, 2)

- 10) If : $(2x + 3)^2 = a x^2 + b x + c$, What is the value of b ?
- a) 12 b) 10 c) 9 d) 6
- 11) A trapezium has a middle base of 8 cm and a height of 5 cm. Its area = cm^2
- a) 20 b) 40 c) 26 d) 80
- 12) $(x^2 + x) \div x = \dots\dots\dots$
- a) x b) x + 1 c) 0 d) 2x+1
- 13) What inequality expresses that twice the number x is less than 5?
- a) $2x > 5$ b) $x+2 < 5$ c) $x - 2 < 5$ d) $2x < 5$
- 14) A trapezium has parallel bases of lengths 6 cm and 10 cm and a height of 6 cm. Its area is cm^2
- a) 120 b) 60 c) 48 d) 26
- 15) The image of point (1 , 5) by reflection in the x-axis followed by reflection in the y-axis is
- a) (1 , -5) b) (-1 , -5) c) (5 , 1) d) (-1 , 5)
- 16) If: $\frac{2x + a}{x+3} = 2$, then what is the value of a ?
- a) 2 b) 3 c) 5 d) 6

Second: Answer the following:

- 1) Simplify in the simplest form:

$$\frac{4^8 \times 4^{-5}}{4^2}$$

2) Simplify in the simplest form:

$$\sqrt{\frac{81}{25}} \times \left(\frac{9}{7}\right)^0 + \sqrt[3]{\frac{125}{27}}$$

3) Find the solution set of the following inequality in Z:

$$3x - 1 \geq 11$$

4) Draw the triangle ABC where A(1, 1), B(4, 1), C(1, 5), then draw its image by reflection in the x-axis.

5) Draw an angle measuring 60° and then bisect it using a ruler and compass.

6) Draw triangle ABC where: A (-1, 1), B (3, 1), C (3, 4), then draw its image by translation (1, -2).

7) A trapezium has parallel bases of lengths of 10 cm and 14 cm, and a height of 8 cm. What is its area in square centimeters?

8) Find by inspection:

$$(2x + 1)(x + 4)$$

9) Draw the equilateral triangle ABC with a side length of 6 cm, then bisect $\angle ABC$ using geometric tools.

10) Draw $\triangle ABC$ where $AB = 7$ cm, $BC = 5$ cm, and $m(\angle ABC) = 80^\circ$

11) Find the quotient of: $(9x^4 - 6x^3 + 12x^2)$ divided by $-3x$, where $x \neq 0$

12) In an experiment where a fair die is rolled once, find each of the following events:

- (1) A event: Obtaining an even number
- (2) B event: Obtaining a number less than 3
- (3) C event: Obtaining a number greater than 6

13) Simplify in the simplest form: $(x + 2)^2 - (x + 4x)$

14) Draw triangle ABC where: A (-1, 1), B (3, 1), C (3, 4), then draw its image by translation $(x + 4, y - 1)$.

15) Draw the square ABCD where: A (0, 2), B (2, 2), C (2, 4), D (0, 4), then draw its image by rotating $R(O, 180^\circ)$

- 16) A bag contains a red ball, 6 blue balls, and 3 green balls, all identical. If a ball is randomly drawn from the bag and its color is observed, what is the probability that the drawn ball is:
- (1) Blue.
 - (2) Not green.
 - (3) Red or blue.
- 17) A trapezium has a height of 15 cm and the ratio of the lengths of its two bases is 4 : 3 , If the length of the longer base is 8 cm, find the surface area of the trapezium.

- 18) Find the solution set of the following equation in Z :

$$(x - 1)^3 + 2 = -6$$

- 19) Simplify in the simplest form: $(2x - 1)(x^2 - 3x + 4)$
- 20) Find the quotient:

$$\frac{-15X^3Y^3 + 25X^2Y^5 + 10X^4Y^6}{-5X^2Y^3}$$

- 21) Find the result in scientific notation:

$$(4.5 \times 10^3) \times (4 \times 10^2)$$

- 22) A trapezium has a height of 8 cm and a surface area equal to the surface area of a square with a diagonal of 12 cm. Find the length of the middle base of the trapezium.

- 23) Find the solution set of the following equation in Q :

$$27x^3 + 4 = 68$$

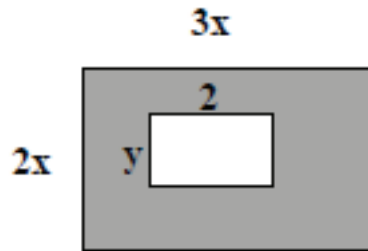
- 24) Which has a greater area: a rhombus with diagonals of 6 cm and 8 cm, or a square with a diagonal of 8 cm?

- 25) Simplify in the simplest form:

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

Then find the numerical value of the expression when $x = 2$

- 26) Find in the simplest form, the expression that represents the area of the shaded part in the figure opposite:



- 27) If the quotient of $(x^2 - 2x - 35)$ divided by $(x + 5)$ is $(x + b)$, then what is the value of b ?
- 28) A square has a diagonal of $(x + 23)$ cm. Find its area in terms of x , then find the numerical value of the area when $x = 2$
- 29) Draw $\triangle ABC$ where $AB = 6$ cm, $BC = 4$ cm, and $AC = 5$ cm.
- 30) Which is greater in area:
A square with a diagonal of 10 feet or a parallelogram with a base of 10 feet and a corresponding height of 4 feet?
- 31) Find the length of the diagonal of a square whose area is equal to the area of a rectangle whose length is 9 cm and width is 8 cm.
- 32) Draw the parallelogram whose vertices are : $A(1, 4)$, $B(3, 3)$, $C(3, 0)$, $D(1, 1)$, then draw its image by reflection in the x -axis.
- 33) A trapezium has an area of 88 square centimeters and a height of 11 centimeters. If the length of its shorter base is 6 centimeters, what is the length of its longer base?
- 34) Find the quotient of: $(x^4 - 1)$ divided by $(x^2 + 1)$
- 35) When a fair die is rolled once and the number shown on the upper face is observed, find the probability of each of the following events:
(1) A the event of obtaining an odd prime number.
(2) B the event of obtaining a perfect square number.



مذكرات جاهزة للطباعة

لتحميل الملفات التعليمية مجاناً للمعلم والطالب

مذكرات وملازم / مراجعات وملخصات / امتحانات / كتب الوزارة /
أدلة المعلم / دفاتر التحضير / سجلات مدرسية / أوراق تأسيس

امسح الكود بموبايلك علشان تقدر تثبت التطبيق

وتقدر ف أي وقت تحمّل ال نفسك فيه ببلاش

هيغنيك عن البحث والجروبات والقنوات الكثيرة

