MINISTRY OF EDUCATION AND TECHNICAL EDUCATION

وزارة التربية والتعليم والتعليم الفني

2



Mathematics

Performances and Assessments

Second Preparatory

First term

The Ministry of Educataion and Technical Education
dedicates this book, with love to the students, teachers,
and families of the Arab Republic of Egypt



MATHEMATICS

Performances and Assessments

Second Preparatory

First term

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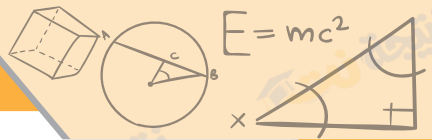
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Introduction

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...

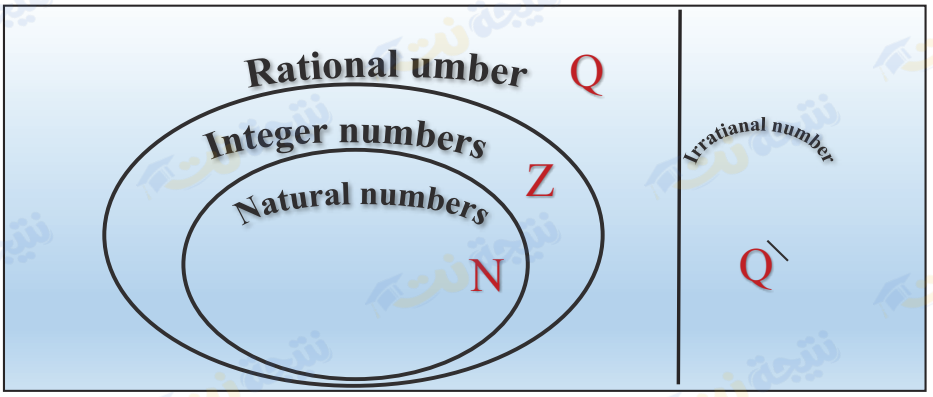
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Unit One	Week	Lesson 1: Real number	Date: / /

Class performance:

Activity (1): "Number Map Challenge" :

Paste each number in the appropriate place:



$-\sqrt{9}$ | 3 | -0.2 | $\sqrt{7}$ | $0.\overline{3}$ | $1\frac{1}{2}$ | 0 | 25% | π | $\sqrt[3]{5}$ | 1.5

Activity (2): "Solution Hunter"

Distribute to each group cards containing equations such as:

$x^2 = 5$ $x^2 = 25$ $2x + 1 = 7$ $2x^3 + 3 = 8$ $x^3 + 1 = 7$

Each group is asked to solve the equation. Determine whether the solution belongs to the set of real numbers. Explain why if the solution does not belong.

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Home performance (Homework):

(1) Put in the empty box a suitable symbol from the two symbols $\in$ or $\notin$:

❶ $\sqrt{-2}$ ☐ R

❷ $\sqrt{5}$ ☐ Z

❸ $0.\overline{5}$ ☐ Q

❹ $\sqrt[3]{8}$ ☐ R

(2) Find in R the solution set of the following equations:

1) $2x^2 - 1 = 49$

2) $x^2 - 5 = 2$

3) $3x^3 + 7 = 31$

4) $x^3 - 11 = 28$

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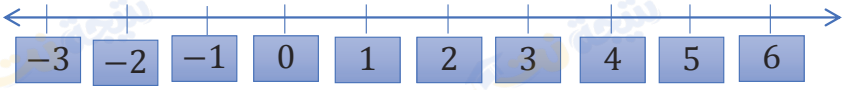
Unit One	Week	Lesson 2: Intervals and their operations	Date: / /

Class performance:

Activity (1): intervals Hunter on the Number Line

The student takes the role of a "Hunter" who must accurately locate the different intervals on the .number line, using arrows or circles to indicate the type of interval (closed, open, semi-open)

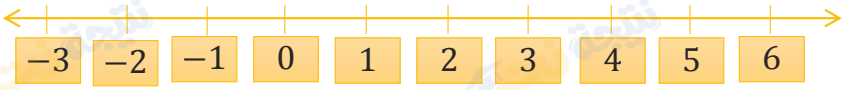
❶ $[-2,1]$, $]3,6[$



❷ $]-3,2]$, $[4,5[$



❸ $[4,\infty[$, $]-\infty,1[$



❹ $]2,\infty[$, $]-\infty,-1]$



Activity (2): "A sports trip on the group track"

Using the opposite number line, consider the intervals X=[1,4] and Y=]26], then find

① $X \cap Y = \cdots$

② $X \cup Y = \cdots$

③ $X - Y = \cdots$



.....

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Home performance (Homework):

1) Using the opposite number line, consider the intervals $X =]-\infty, 4[$ and $Y =]2, \infty]$, then find $X \cap Y$



.....

.....

2) Using the opposite number line, consider the intervals $X = [2,6]$ and $Y =]1,3]$, then find $X \cup Y$



.....

.....

3) Using the opposite number line, consider the intervals $X = [2,6]$ and $Y =]0,5]$, then find $X - Y$



.....

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(Weekly assessment) Week …….

Group (A)

First: Choose the correct answer from the given answers:

1) Which of the following numbers is an irrational number

(a) $0.\overline{5}$ (b) $\sqrt{7}$ (c) $\sqrt{\frac{9}{25}}$ (d) $\sqrt[3]{8}$

Second: Answer the following:

2) Using the number line, consider the intervals X = [3,4] and Y =]1,3], then find X ∪ Y

……

3) Using the number line, consider the intervals X = [3,6] and Y =]1,3], then find X ∩ Y

……

4) Find in R the solution set of the following equation : $x^2 - 8 = 3$

……

5) Determine the interval that expresses]2 ,5[∪ {2,5} .

……

Group (B)

First: Choose the correct answer from the given answers:

1) Which of the following numbers is an irrational number

(a) $0.\overline{3}$ (b) $\sqrt{3}$ (c) $\sqrt{\frac{16}{49}}$ (d) $\sqrt[3]{-8}$

Second: Answer the following:

2) Using the number line, consider the intervals X = [3,5] and Y =]2,3], then find X ∪ Y

……

3) Using the number line, consider the intervals X = [7,9] and Y =]1,7], then find X ∩ Y

……

4) Find in R the solution set of the following equation : $x^2 - 3 = 4$

……

5) Determine the interval that expresses]1 ,2[∪ {1 , 2} .

……

Group (C)

First: Choose the correct answer from the given answers:

1) Which of the following numbers is an irrational number

(a) $0.\overline{5}$ (b) $\sqrt{7}$ (c) $\sqrt{\frac{9}{25}}$ (d) $\sqrt[3]{8}$

Second: Answer the following:

2) Using the number line, consider the intervals X = [5 , 7] and Y =]4 , 5], then find X ∪ Y

……

3) Using the number line, consider the intervals X = [8,9] and Y =]1,8], then find X ∩ Y

……

4) Find in R the solution set of the following equation : $x^2 - 8 = 5$

……

5) Determine the interval that expresses]3 ,4[∪ {3 ,4} .

……

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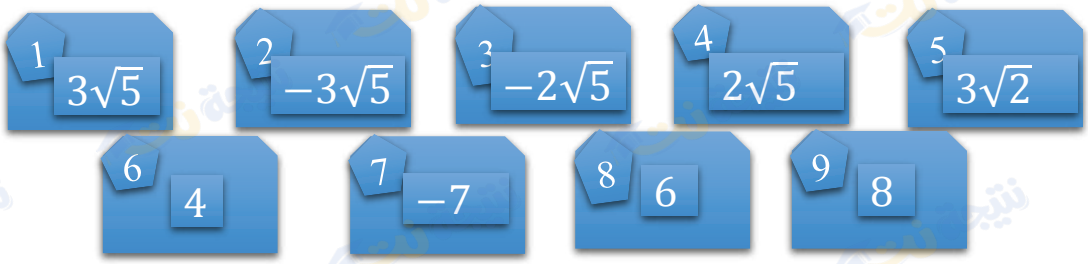
Unit One	Week	Lesson 3: Operations on real numbers	Date: / /

Class performance:

Activity (1) An adventure in the world of real numbers:

Write the correct answer card number inside the circle.

◯ $\sqrt{5}+2\sqrt{5}=$	◯ $(\sqrt[3]{6})^3=$	◯ $\times 3\sqrt{2}=$
◯ $5\sqrt{5}-7\sqrt{5}=$	◯ $(\sqrt{2})^6=$	◯ $\frac{6}{\sqrt{2}}=$
◯ $\frac{10}{\sqrt{5}}=$	◯ $-\sqrt{7}\times\sqrt{7}=$	◯ $\frac{-15}{\sqrt{5}}=$



Home performance (Homework):

(1) Find the result of each of the following in its simplest form:

❶ $(\sqrt{8}-3)(\sqrt{8}+3)$ ❷ $(\sqrt{5}-1)^2+(\sqrt{5}+2)(\sqrt{5}-2)$

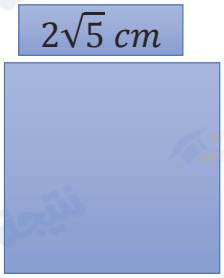
❸ $(\sqrt{3}-2)^2$

(2) Make the denominator in each of the following an integer:

❶ $\frac{10}{2\sqrt{5}}$ ❷ $\frac{10}{5-\sqrt{15}}$

(3) Find the area of the opposite square:

(The area of a square whose side length x equals x^2)



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(Weekly assessment) Week .....

Group (A)

First: Choose the correct answer from the given answers:

1) If $\frac{x}{3\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then the value of $x^2 + y^2$ = ...

(a) 36 (b) 38 (c) 42 (d) 45

Second: Answer the following:

2) find in the simplest form : $(\sqrt{5}-2)^2 + (\sqrt{5}+3)(\sqrt{5}-2)$

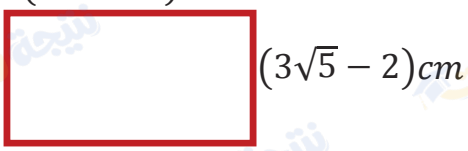
.....

3) Make the denominator of the number $\frac{6}{\sqrt{3}}$ an integer.

.....

4) Find the area of the opposite rectangle:

.....



5) If $a\sqrt{3} - 3\sqrt{3} = 5\sqrt{3}$, find the value of a ?

.....

Group (B)

First: Choose the correct answer from the given answers:

1) if $\frac{x}{2\sqrt{2}} = \frac{y}{2\sqrt{3}} = 1$, the value of $x^2 + y^2$ = ...

(a) 24 (b) 20 (c) 36 (d) 40

Second: Answer the following:

2) find in the simplest form : $(\sqrt{7}-2)^2 + (\sqrt{7}+3)(\sqrt{7}-1)$

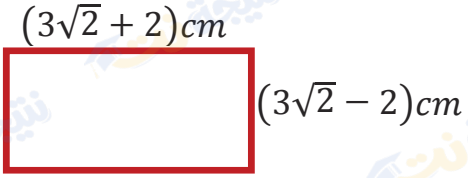
.....

3) Make the denominator of the number $\frac{12}{\sqrt{3}}$ an integer.

.....

4) Find the area of the opposite rectangle:

.....



5) If $a\sqrt{3} + 3\sqrt{3} = 5\sqrt{3}$, find the value of a ?

.....

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Group (C)

First: Choose the correct answer from the given answers:

1) If $\frac{x}{2\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then the value of $x^2 + y^2$ = ...

(a) 28 (b) 9 (c) 10 (d) 11

Second: Answer the following:

2) find in the simplest form : $(\sqrt{3}-2)^2 + (\sqrt{3}+3)(\sqrt{3}-2)$

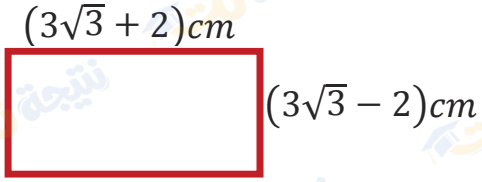
.....

3) Make the denominator of the number $\frac{24}{\sqrt{3}}$ an integer.

.....

4) Find the area of the opposite rectangle:

.....



5) If $a\sqrt{3} + 3\sqrt{3} = 7\sqrt{3}$, find the value of a ?

.....

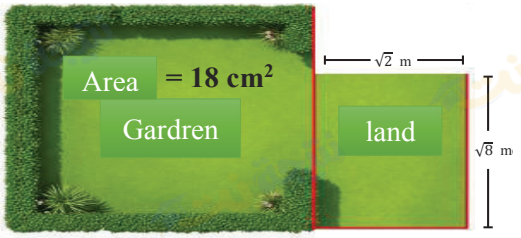
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Unit One | Week ..... | Lesson 4: Laws of square and cube roots | Date: / /

Class performance:

Activity (1): (The Garden):

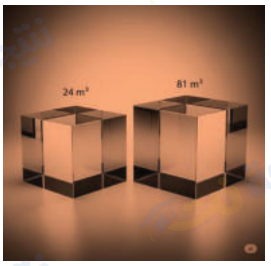
Aser owns a perfectly square garden. However, he doesn't know the exact length of its sides! All he knows is that its area is 18 square meters, plus another adjacent rectangular plot of land measuring $\sqrt{8}$ meters in length and $\sqrt{2}$ meters in width. Aser wants to build a wall around the garden and the land. What is its perimeter?



.....

Activity (2) (the box):

Karma owns two boxes. The first is a cubic glass box with a total volume of 24 cubic meters. The second is another cubic box with a volume of 81 cubic meters. She places the two boxes next to each other and wants to find the difference between the lengths of their sides.



Home performance (Homework):

Answer the following:

1) Find in the simplest form each of the following :

   a) $\sqrt{27}$ b) $\sqrt{8}$ c) $\sqrt[3]{16}$ d) $4\sqrt{\frac{1}{2}}$

2) Find in the simplest form: $\sqrt{108} - \sqrt{48} + 2\sqrt{27} + \sqrt{75}$

3) Find in the simplest form: $\sqrt[3]{24} + \sqrt[3]{81} - 5\sqrt[3]{3}$

4) If the perimeter of a rectangle is $\sqrt{300}$ meters and its length is $\sqrt{27}$ meters, find its width.

5) A square has an area of 144 square meters. Find the length of its diagonal.

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Unit One | Week ..... | Lesson 5 : Lows of Exponents in Real Numbers | Date: / /

Class performance:

Activity (1) (Skyscraper Facade):

The facade of a skyscraper is rectangular in shape with dimensions of $(\sqrt{2})^{15}$ meters, $(\sqrt{2})^{9}$ meters. An engineer wants to calculate the area of the facade and the ratio between its dimensions.



.....

Home performance (Homework):

Answer the following:

1) Find in the simplest form: $\frac{(36)^n \times (5)^{2n}}{(30)^{2n}}$
2) Find the value of $\left(\frac{3\sqrt{2}}{2\sqrt{3}}\right)^4$
3) If $a = \sqrt{8}$, $b = \frac{a}{2}$, then find the value of $a^3 + b^5$, $(ab)^3$
4) If $3^x = 5$, then find the value of 3^{x+1}
5) Find in the simplest form $\frac{(8)^x \times (9)^x}{(18)^x}$,
   then find the numerical value if $x = 2$

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(Weekly assessment) Week .....

Group (A)

First: Choose the correct answer from the given answers:

1) $\sqrt[3]{2} + \sqrt[3]{2}$ = ...

(a) $\sqrt[3]{2}$ (b) $\sqrt[3]{4}$ (c) $\sqrt[3]{8}$ (d) $\sqrt[3]{16}$

Answer the following:

2) If $x = (\sqrt{2} - 2)$ ، $y = (\sqrt{2} + 2)$ the find in the simplest form:

a) xy b) $x + y$

.....

3) Find in the simplest form $\sqrt[3]{-16} - \sqrt{28} + \sqrt[3]{54} - \frac{14}{\sqrt{7}}$

.....

4) Find in the simplest form $\frac{(\sqrt{3})^6 \times (\sqrt{3})^4}{(\sqrt{3})^5 \times (\sqrt{3})^3}$

.....

5) Find the value of $(\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2})$?

.....

Group (B)

First: Choose the correct answer from the given answers:

1) $\sqrt[3]{3} + \sqrt[3]{3}$ = ...

(a) $\sqrt[3]{24}$ (b) $\sqrt[3]{12}$ (c) $\sqrt[3]{3}$ (d) $\sqrt[3]{6}$

Answer the following:

2) if $x = (\sqrt{5} - 2)$ ، $y = (\sqrt{5} + 2)$. find in the simplest form

a) xy b) $x + y$

.....

3) Find in the simplest form : $\sqrt{18} + \sqrt[3]{54} - \sqrt{\frac{216}{12}} - \sqrt[3]{16}$

.....

4) Find in the simplest form : $\frac{(\sqrt{5})^5 \times (\sqrt{5})^8}{(\sqrt{5})^4 \times (\sqrt{5})^5}$

.....

5) Find the value of $\sqrt{15} - \sqrt{12})(\sqrt{15} + \sqrt{12})$?

.....

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Group (C)

First: Choose the correct answer from the given answers:

1) $\sqrt[3]{5} + \sqrt[3]{5}$ = ...

(a) $\sqrt[3]{40}$ (b) $\sqrt[3]{25}$ (c) $\sqrt[3]{5}$ (d) $\sqrt[3]{10}$

Answer the following:

2) if $x = (\sqrt{3} - 5)$ ، $y = (\sqrt{3} + 5)$. find in the simplest form

.....

a) x y b) x + y

3) Find in the simplest form) : : $5\sqrt{2} + -\frac{1}{2}\sqrt{200} - (\sqrt[3]{5} \times \sqrt[3]{25})$

.....

4) Find in the simplest form : $\frac{(\sqrt{7})^6 \times (\sqrt{7})^2}{(\sqrt{7})^3 \times \sqrt{7}}$

.....

5) Find the value of $(\sqrt{7} - \sqrt{4})(\sqrt{7} + \sqrt{4})$?

.....

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Unit Two | Week ..... | Lesson 1 : Factorizing by Taking Out Greatest Common Factor GCF | Date: / /

Class performance:

Activity (1): (The Garden):

Emad owns a garden with $12x$ jasmine seedlings and $16y$ violet seedlings. Ahmed wants to distribute the violet and jasmine seedlings equally in the garden. What is the method?



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Activity (2) (the box):



Farah has $(12x)$ colored cubes and $(18y)$ beautiful dolls. She wants to distribute them equality among boxes. How many cubes and dolls should she put in each box?

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Home performance (Homework):

Answer the following questions :

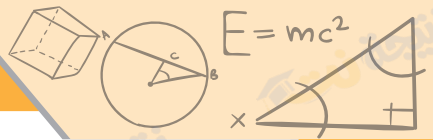
1) Factorise the following polynomials by taking out the greatest common factor:
   a) $15x^3 + 5x^5$ .....
   b) $9x^2 + 6xy$ .....
2) $8m^3 - 12m^2n + 20mn^2$ .....
   Using the greatest common factor, find the numerical value of : $6 \times \frac{5}{7} + 2 \times \frac{5}{7} - \frac{5}{7}$

.....

3) Find in R the solution set of the following equations:
   a) $5y^2 - 10y = 0$ .....
   b) $9k^2 + 18k = 0$ .....
4) If $(2a + b) = 6$, $(3a + b) = 8$ then find the numerical value of :
   $3a(2a + b) + b\,(2a + b)$

.....

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5) Factorise the following polynomials by taking out the greatest common factor:

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

.....

(Weekly assessment) Week .....

Group (A)

First: Choose the correct answer from the given answers:

1) $5x^2 + 15xy = 5x(\ldots\ldots + \ldots\ldots)$

(1) $x+y$ (2) $3y-x$ (3) $x+3y$ (4) $20x^3y$

Second : Answer the following questions :

2) Factorise the following polynomials by taking out the greatest common factor:

(1) $6x^2 - 2x^3 + 6x^4$ (2) $x(x+5) - 3(x+5)$

.....

3) Find in R the solution set of the following equation:

$5y^2 - 25y = 0$

.....

4) The greatest common factor of $12x^3 + 6x^2$?

.....

Group (B)

First: Choose the correct answer from the given answers:

1) $6x^2 + 18xy = 6x(\ldots\ldots + \ldots\ldots)$

(a) $x+y$ (b) $3y-x$ (c) $x+3y$ (d) $20x^3y$

Second :Answer the following questions :

2) Factorise the following polynomials by taking out the greatest common factor:

(1) $5x^2 - 10x^3 + 15x^4$ (2) $x(x+1) - 7(x+1)$

.....

3) Find in R the solution set of the following equation:

$9y^2 - 18y = 0$

.....

4) The greatest common factor of $12x^2 + 8x$?

.....

Group (C)

First: Choose the correct answer from the given answers:

1) $4x^2 + 12xy = 4x(\ldots\ldots + \ldots\ldots)$

(a) $x+y$ (b) $3y-x$ (c) $x+3y$ (d) $20x^3y$

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Second : Answer the following questions :

2) Factorise the following polynomials by taking out the greatest common factor:

(1) $4x - 12x^2 + 16x^3$ (2) $a(a+4) - 3(a+4)$

.....

3) Find in R the solution set of the following equation:

(1) $10y^2 - 30y = 0$

.....

4) The greatest common factor of $9x^3 + 3x^2$?

.....

Unit Two	Week	Lesson 2: Factorizing Trinomial	Date: / /

Class performance:

Activity (1): (You and I)

You and I are two integers. Our product is 24 and our sum is 11.
Who are we?

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.....
.....



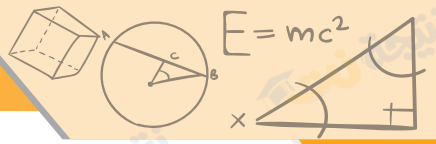
Activity (2): (A riddle on the board)



Your friend Maryam said: If we assume that the area of the board is $(x^2 - 5x + 6)$ m², and its length is $(x - 3)$ m,
how can we find the width of the board in terms of x, using two different methods?
Then determine which method is faster in your opinion.

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Home performance (Homework):

Answer the following questions :

1) Factorise the following completely

1) $x^2 + 7x + 12$

2) $2x^2 - 16x + 30$

3) $-x^2 + 3x + 10$

4) $(x+4)(x+3) - 6$

5) $x^2 + 14x + 15$

6) $9x^2 - 9x - 4$

7) $3x^4 - 11x + 6$

2) Find in R the solution set of the equation: $14x + x^2 - 32 = 0$

3) Find in R the solution set of the equation: $x^2 - 3x = 28$

4) Find the positive integer values of b that make each of the following can be factorized:

a) $x^2 + bx + 6$ b) $x^2 + 5x + b$

End of the first month

First: Choose the correct answer from the given answers:

1) Which of the following numbers is not a real number? ……..

(a) $\frac{22}{7}$ (b) $\sqrt{25}$ (c) $\sqrt{-25}$ (d) 25

2) The interval that expresses $]1,4[- \{1\}$ is ……

(a) $[1,4]$ (b) $]1,4[$ (c) $]1,4]$ (d) $[1,4[$

3) $6x^2 + 18xy = 6x(\ldots\ldots + \ldots\ldots)$

(a) $x + y$ (b) $3y - x$ (c) $x + 3y$ (d) $20x^3y$

4) $N \cap [1,4] =$ ……..

(a) $[1,4]$ (b) $\{1,2,3,4\}$ (c) $\{2,3\}$ (d) $\{1\}$

Answer the following questions :

1) If: $x < \sqrt{51} < x + 1, x \in Z$ Find the value of $2x$?

2) If $a\sqrt{3} + 3\sqrt{3} = 9\sqrt{3}$, Find the value of a ?

3) In the simplest form $\left(\frac{\sqrt{3}}{\sqrt[3]{3}}\right)^6$

4) if $\frac{x}{\sqrt{2}} = \frac{y}{\sqrt{5}} = 1$, Find the value of $x^2 + y^2$?

5) The solution set of $x^2 + 25x = 0$ in R ?

6) Find in R the solution set of the following equation: $x^3 + 1 = 730$

7) Find in the simplest form : $(\sqrt{3}-1)^2 + (\sqrt{3}+1)(\sqrt{3}-1)$

8) Find in the simplest form : $2\sqrt{32} + \sqrt{18} + \sqrt{50}$

9) Using the number line, consider the intervals $X = [1,3]$ and $Y =]0,2]$, then find $X \cup Y$

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10) In the opposite figure, find the area of triangle



11) If a = $(\sqrt{7}-\sqrt{5})$, b= $\frac{2}{a}$ then find in the simplest form
1) ab 2) $a-b$

12) Using the number line, consider the intervals X = [3,6] and Y =]1,5], then find X ∩ Y

13) Find the value of x , if $x\sqrt[3]{10}=\sqrt[3]{80}-\sqrt[3]{270}$

14) If $x=2\sqrt{2}$, $y=3\sqrt[3]{3}$,then find the value of (y^3-x^4)

15) Find the value of each of the following by removing the greatest common factor:
(a) $25\times11+25\times18-25\times9$
(b) $14^2+14\times4-14\times8$
(c) $45\times55+45\times46-45$

16) If X = $]-\infty,10]$, then find the complement of X

17) Find in the simplest form $\frac{\sqrt{98}+\sqrt{18}}{\sqrt{50}}$

18) If $x=\sqrt{5}+\sqrt{3}$, $y=\sqrt{5}-\sqrt{3}$, then find in the simplest form each of the following :
(a) $(x+y)^3$ (b) xy (c) $x-y$

19) Which is greater: the length of the side of a square with a surface area of 25 cm^2 or the length of the side of a cube with a volume of 216 cm^3?

20) Factorise the following polynomials by taking out the greatest common factor:
$$(x-5)^2-2(x-5)$$

21) Find in the simplest form $\frac{(\sqrt{3})^n\times(\sqrt{2})^{n+2}}{(\sqrt{6})^n}$

22) If $x=\sqrt{2}$, $y=2$ then find in the simplest form $x^{-10}\,y^{10}$

23) Find in R the solution set of the following equation: $x^2=4x$

24) Express the following situation using an inequality, then write it as an interval and represent it on a number line: You must be between 20 and 40 years old to be eligible for a job.

25) Make the denominator of the number $\frac{4}{\sqrt{7}+\sqrt{3}}$ an integer.

26) If $3^x=5$, then find the numerical value of the following:
(a) 3^{x+1} (b) 3^{x-1} (c) $3^{x+2}+3^{x+3}$

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Unit Two	Week	Lesson 3: Factorizing special cases	Date: / /

Class performance:

Activity (1): (think - pair - share)



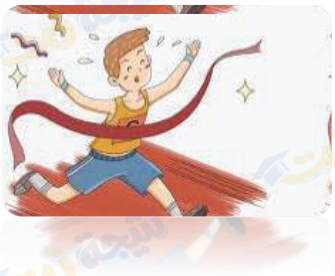
Think alone, then discuss with your partner, then share with the class in using the following algebric expresssions: x^2, 64, x^3, 36 to form 2-terms algebric expressions can be factorized (factorizable), then factorize them.

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Activity 2 (speed race):

Use your watch to calculate the time used in finding the result of: $(999)^2 - 1$
Using factorization, compare your time with colleagues time to determine who is the winner?



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Home performance (Homework):

Answer the following questions:

1) Factorize each of the following:
   1) $x^2 + 14x + 49$
   2) $9x^2 - 30x + 25$
2) Find the value of b which makes each of the following perfect square:
   1) $x^2 + bx + 81$
   2) $4x^2 + 28x + b$
3) Factorize each of the following:
   1) $4x^2 - 25$
   2) $x^2 - 49$
   3) $x^3 + 125$
   4) $8x^3 - 27$
4) If $a - b = 4$, $a^2 - b^2 = 24$, find the value of $a + b$
5) Find in R the solution set of the equation: $x^3 = 49x$

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Weekly assessment Week …….

Group (A)

First: Choose the correct answer:

1) If the polynomial $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b?

a) 2 b)3 c) 6 d) 12

Second: Answer the following: factorize completely:

2) If: $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of a + b?
3) $2x^2 - 7x + 6$
4) $x^3 + 64$
5) $a^2b^2 - 4$

Group (B)

First: Choose the correct answer:

1) If the polynomial $(16x^2 + bx + 1)$ is a perfect square, then what is the value of b?

a) 2 b)4 c) 8 d) 16

Second: Answer the following: factorize completely:

2) If: $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of ab?
3) $9x^2 - 12x + 4$
4) $x^3 + 27$
5) $a^2b^2 - 9$

Group (C)

First: Choose the correct answer:

1) If the polynomial $(25x^2 + bx + 1)$ is a perfect square, then what is the value of b?

a)5 b)10 c)15 d)20

Second: Answer the following: factorize completely:

2) If: $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of a – b?
3) $5x^2 - 28x - 12$
4) $x^3 + 216$
5) $a^2b^2 - 100$

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Unit Two	Week	Lesson 4: Factorizing by grouping	Date: / /



Activity (1) (Collect and Share)

Look at the following polynomial: $ax + bx + ay + by$

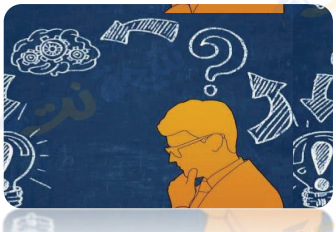
Divide the polynomial into expressions of two terms, then factorize each two terms using the greatest common factor, then take out the repeated two terms as a common factor.

Ask your partner: could he to get the same result but with a different starting in divission?

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Activity (2) (The middle term)



Do you remember the middle term law ?

In the following polynomial: $x^4 + 64$ we need to obtain the middle term, then rewrite the polynomial $x^4 + 64$ with adding or subtracting the middle term you obtained, can you, now, to foctorize it using division?

Ask your class teacher and you can also ask your friend.

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Home performance (Homework):

Answer the following questions:

1) Factorize: $x^3 + 6x^2 - 4x - 24$
2) Factorize: $6x^2 + 19x + 15$ by using the factorization by division.
3) Factorize: $ax + bx + b + a$
4) Factorize each of the following:
   1) $64x^4 + y^4$
   2) $4x^4 + 11x^2 + 9$
5) Find in R the solution set of each of the following equations:
   1) $x^2 - 2x = 4$
   2) $x^3 + x^2 - 4x - 4 = 0$

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weekly assessment week .....

Group (A)

First: Choose the correct answer:

1) If: $x^2 + b = 12$, $x + a = 6$, then the numerical value of the expression $x^3 + ax^2 + bx + ab$

a) 6 b) 12 c) 18 d) 72

Second: Answer the following:

2) Completing the perfect square for the expression: $x^2 + 9$ we add to it ……..
3) Factorize: $x^2 + 2x + xy + 2y$
4) Factorize: $4x^4 + 1$
5) Solve the equation: $x^2 + 7x - 60 = 0$ in R

Group (B)

First: Choose the correct answer:

1) If: $x^2 + b = 15$, $x + a = 5$, then the numerical value of the expression $x^3 + ax^2 + bx + ab$?

a) 5 b) 75 c) 20 d) 15

Second: Answer the following:

2) Completing the perfect square for the expression: $x^2 + 6x$ we add to it ……..
3) Factorize: $x^3 + 2x^2 + 4x + 24$
4) Factorize: $k^4 + 64$
5) Solve the equation: $x^2 - 6x + 8 = 0$ in R

Group (C)

First: Choose the correct answer:

1) If: $x^2 + b = 18$, $x + a = 3$, then the numerical value of the expression $x^3 + ax^2 + bx + ab$?

a) 54 b) 21 c) 15 d) 6

Second: Answer the following:

2) Completing the perfect square for the expression: $x^2 + 16$ we add to it ……..
3) Factorize: $45x^3 + 20x^2 + 9x + 4$
4) Factorize: $x^4 + y^4$
5) Solve the equation: $x^2 + 8x + 15 = 0$ in R

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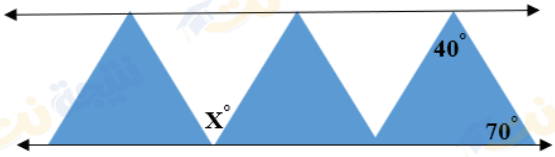
Unit Three	Week	Lesson 1: Congruence	Date: / /

Class performance:

Activity (1) (Ramadan decorations)

Galal cut the decorations' papers in congruent triangle Shapes using them to decorate his house in celebrating the month of Ramadan.

Can you determine the value of X in this shape?



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Activity (2) (The missing triangle)

You have a triangle in table (1) looking for its congruent twin in table (2)

Cooperate with your college to determine the congruent triangle to it.

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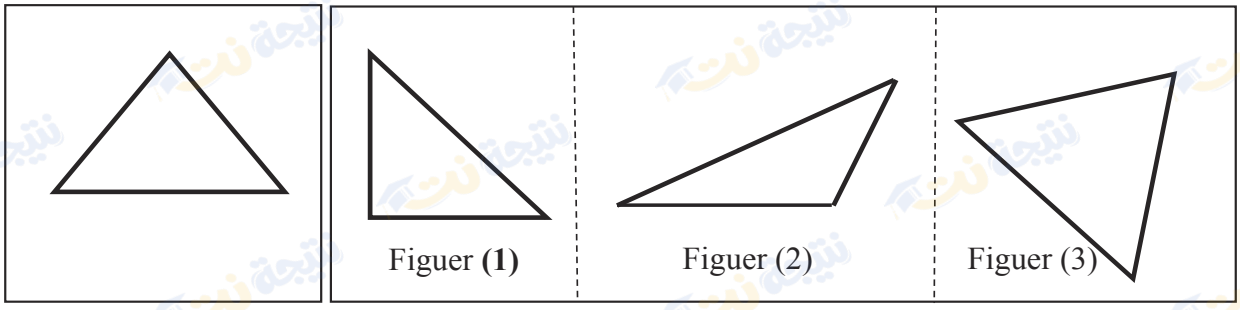
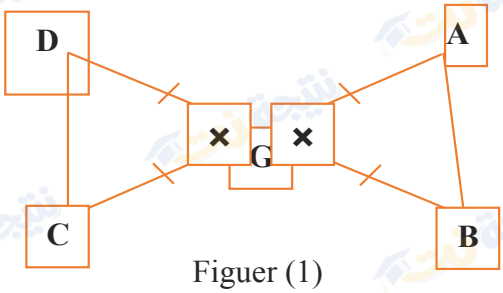


Table (1) Table (2)

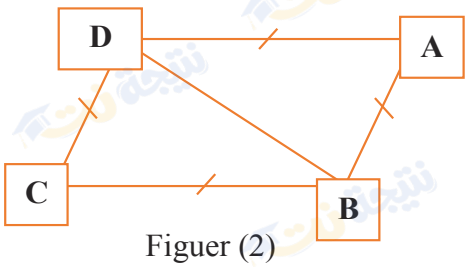
Home performance (Homework):

Answer the following questions:

1) State the congruent case can be used in proving the congruent of the two triangles in each of the following:



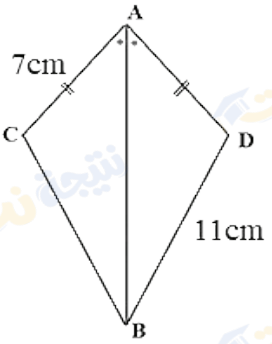
Figuer (1)



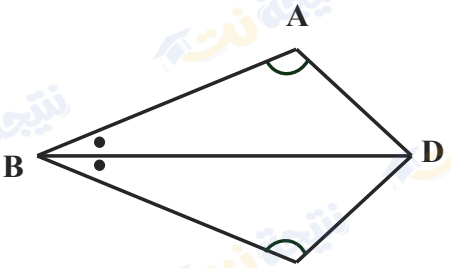
Figuer (2)

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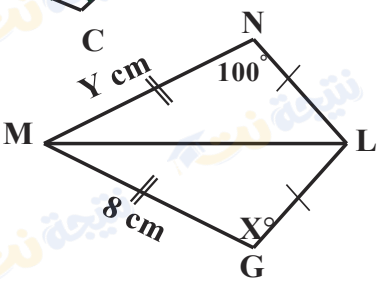
2) In the opposite figure:
   1) Prove that: $\triangle ABC \cong \triangle ABD$
   2) Find the perimeter of the polygon ADBC



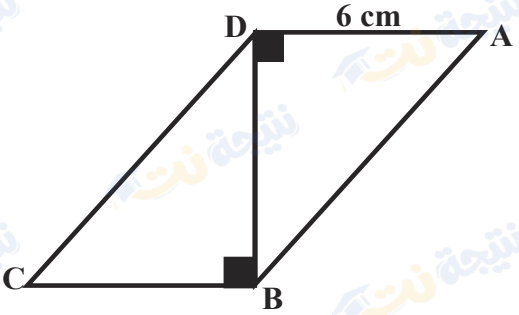
3) In the opposite figure:
   $\overrightarrow{BD}$ bisects $\angle ABC$, $\angle A \cong \angle C$
   Prove that: $\triangle ABD \cong \triangle CBD$



4) In the opposite figure:
   $MN = MG$, $NL = GL$
   Find with proof the value of each of: , Y



5) In the opposite figure:
   $m(\angle ADB) = m(\angle CBD) = 90^\circ$
   $AB = CD$
   1) Prove that: $\triangle ADB \cong \triangle CBD$
   2) Find the length of $\overline{CB}$



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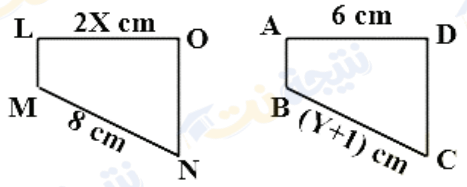
(Weekly assessment) Week .....

Group (A)

First- Choose the correct answer from those given:

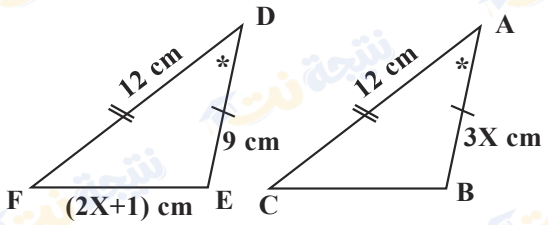
1) In the opposite figure:
If the polygon $ABCD \cong$ the polygon $LMNO$
then what is the value of **X + Y**?

a) 14 b) 9
c) 10 d) 23

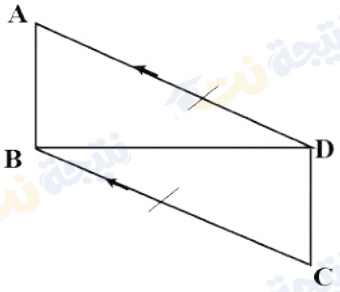


Second: answer the following:

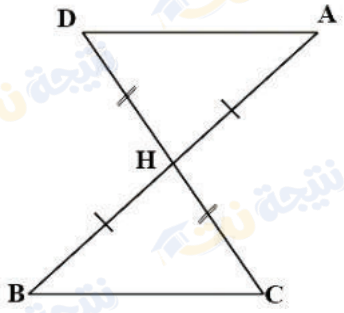
1) In the opposite figure:
what is the length of $\overline{CB}$?



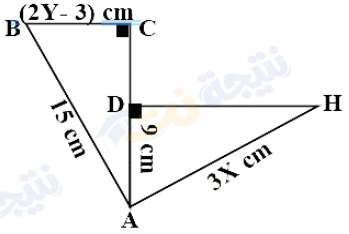
2) In the opposite figure:
$AD = CB$, $\overline{AD} \,//\, \overline{BC}$
Prove that: $\triangle ABD \cong \triangle CDB$



3) In the opposite figure:
H is the midpoint of each of $\overline{AB}$, $\overline{CD}$
Prove that: 1) $\triangle AHD \cong \triangle BHC$
2) $\overline{AD} \,//\, \overline{BC}$



4) In the opposite figure:
If: $\triangle ABC \cong \triangle HAD$
then find the value of: **X + Y**



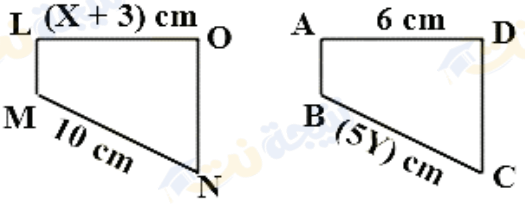
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Group (B)

First- Choose the correct answer from those given:

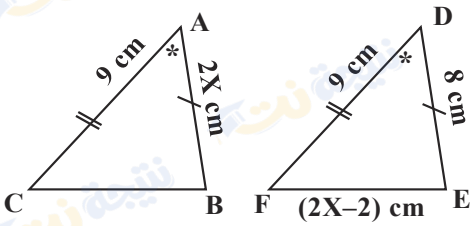
1) In the opposite figure:
If the polygon $ABCD \cong$ the polygon $LMNO$
then what is the value of **X + Y** ?

a) 5 b) 19
c) 16 d) 6

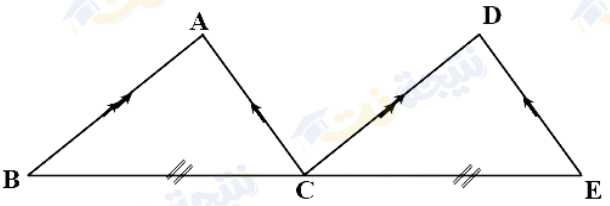


Second: answer the following:

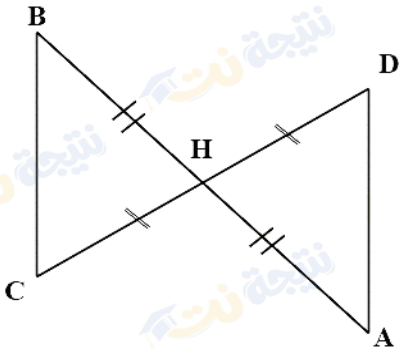
1) In the opposite figure:
what is the length of $\overline{CB}$?



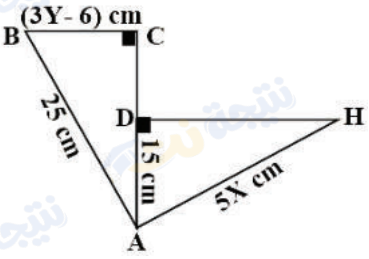
2) In the opposite figure:
$\overline{AC} \,//\, \overline{DE}, \overline{AB} \,//\, \overline{DC}$
$BC = CE$
Prove that: $\triangle ABC \cong \triangle DCE$



3) In the opposite figure:
H is the midpoint of each of $\overline{AB}$, $\overline{CD}$
Prove that: 1) $\triangle AHD \cong \triangle BHC$
2) $\overline{AD} \,//\, \overline{BC}$



4) In the opposite figure:
If: $\triangle ABC \cong \triangle HAD$
then find the value of: **X + Y**

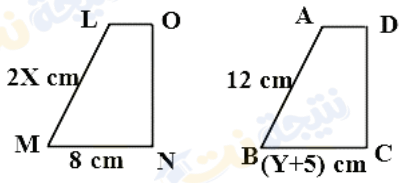


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Group (C)

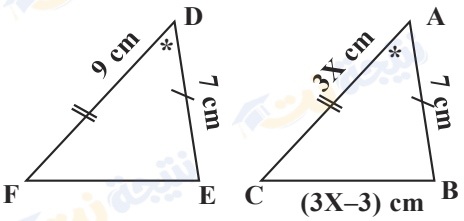
First- Choose the correct answer from those given:

1) In the opposite figure:
If the polygon $ABCD \cong$ the polygon $LMNO$
then what is the value of **X + Y** ?
a) 10 b) 9
c) 20 d) 24

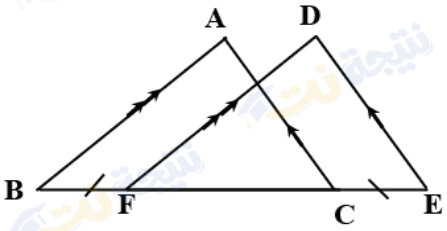


Second: answer the following:

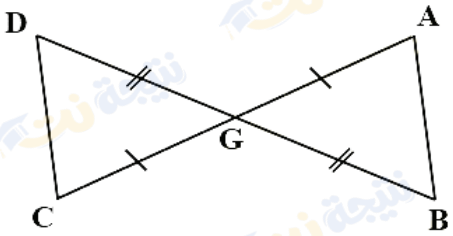
1) In the opposite figure:
what is the length of $\overline{FE}$?



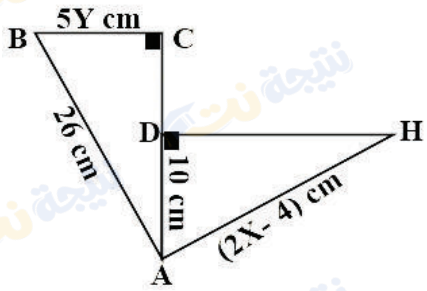
2) In the opposite figure:
$\overline{AC} \,//\, \overline{DE}, \overline{BA} \,//\, \overline{FD}$
$BF = EC$
Prove that: $\triangle ABC \cong \triangle DFE$



3) In the opposite figure:
G is the midpoint of each of $\overline{AC}$, $\overline{BD}$
$\overline{BD} \cap \overline{AC} = \{G\}$
Prove that: 1) $\triangle AGB \cong \triangle CGD$
2) $\overline{AB} \,//\, \overline{DC}$



4) In the opposite figure:
If: $\triangle ABC \cong \triangle HAD$
then find the value of: **X + Y**



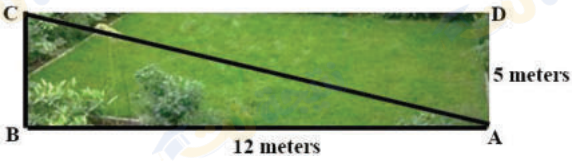
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Unit Three | Week ..... | Lesson 2 : Pythagoras' theorem and its converse | Date: / /

Class performance:

Activity (1) (Walking in the garden)

A rectangular shaped garden, its dimensions are 5 m , 12 m,
Omar walked from the point A to the point C.
Find the distance which Omar walked.

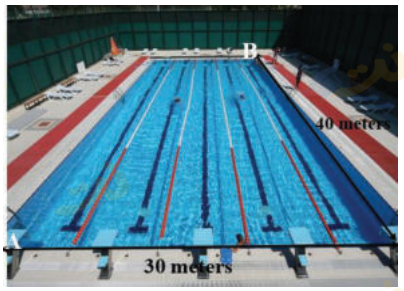


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Activity (2) (Can you swim)

The swimming coach asked Mariam to swim in the swimming pool diagonally from the point A to the point B. If the swimming pool has a rectangular shape its length is 40 meters, and its width is 30 meters.
Can you help Mariam to calculate the distance that she swam?
(Cooperate with your college in the classroom).

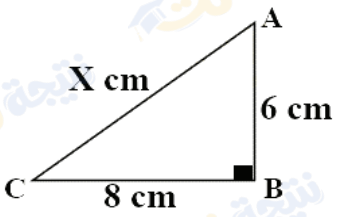


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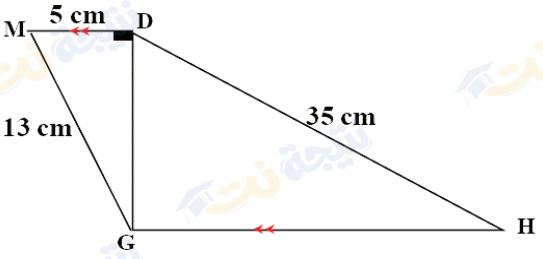
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Home performance (Homework):

1) In the opposite figure:
Find with proof the value of X,
then find the area of the triangle ABC.



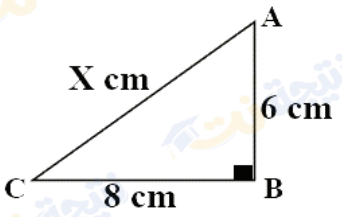
2) In the opposite figuer:
$\overline{MD} \,//\, \overline{HG}$
Find the perimeter of the polygon MDHG.



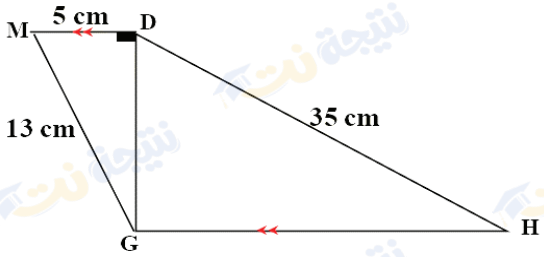
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Home performance (Homework):

1) In the opposite figure:
Find with proof the value of X,
then find the area of the triangle ABC.

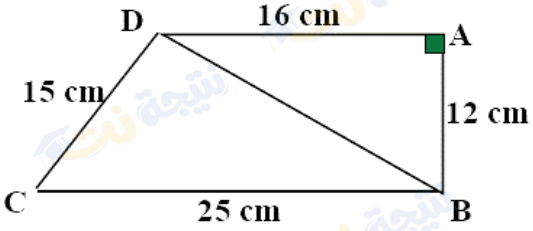


2) In the opposite figuer:
$\overline{MD} \,//\, \overline{HG}$
Find the perimeter of the polygon MDHG.



3) Which of the following represent the lengths of sides of a right-angled triangle?
1) 12 cm , 11 cm , 17 cm. 2) 40 cm , 9 cm , 41 cm.

4) In the opposite figuer:
ABCD is a quadrilateral , $m(\angle A) = 90^\circ$
Prove that: $m(\angle CDB) = 90^\circ$



.....

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5) In each of the following, state the type of the triangle respect to its angles if the lengths of its sides are:
1) 5 cm , 3 cm , 7 cm 2) 7 cm , 25 cm , 24 cm 3) 9 cm , 8 cm , 11 cm

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(The weekly evaluation) Week …….

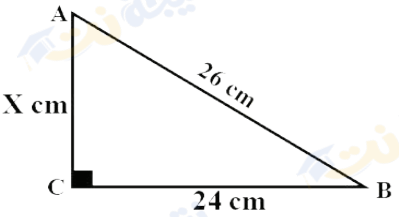
Group (A)

First- Choose the correct answer from those given:

1) Which of the following numbers could be the lengths of sides of a right-angled triangle?

a) 7 , 7 , 5 b) 9 , 8 , 5

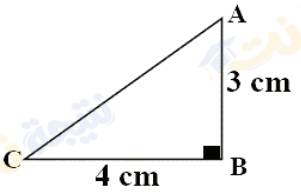
c) 9 , 12 , 15 d) 8 , 13 , 15



Second- Answer the following:

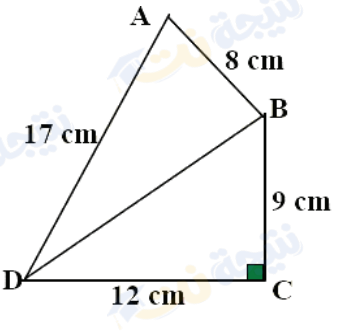
1) In the opposite figuer:
Find the value of **X** , then find the perimeter of the triangle ABC

2) In the opposite figuer:
what is the area of the square constucted on the side $\overline{AC}$?



3) Determine the type of the triangle respect to its angles if the lengths of its sides are:
$3\sqrt{3}$ cm , $4\sqrt{3}$ cm , $5\sqrt{3}$ cm

4) In the opposite figuer:
Prove that: $m(\angle ABD) = 90^{\circ}$



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Group (B)

First- Choose the correct answer from those given:

1) Which of the following numbers could be the lengths of sides of an acute-angled triangle?

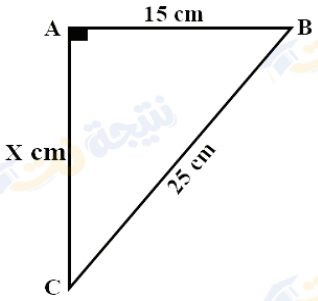
a) 6 , 6 , 9 b) 13 , 12 , 5

c) 3 , 5 , 6 d) 10 , 11 , 9

Second- Answer the following:

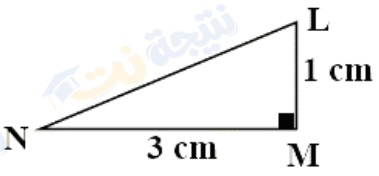
1) In the opposite figuer:

Find the value of **X** , then find the perimeter of the triangle ABC



2) In the opposite figuer:

what is the area of the square constucted on the side $\overline{NL}$?

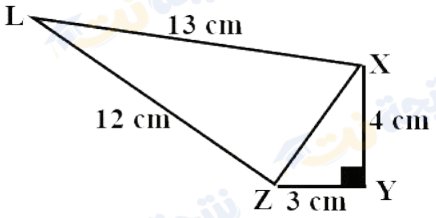


3) Determine the type of the triangle respect to its angles if the lengths of its sides are:

$\sqrt{5}$ cm , $\sqrt{6}$ cm , $\sqrt{7}$ cm

4) In the opposite figuer:

Prove that: $m(\angle LZX) = 90^{\circ}$



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Group (C)

First- Choose the correct answer from those given:

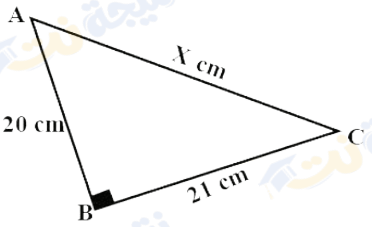
1) Which of the following numbers could be the lengths of sides of an obtuse-angled triangle?

a) 5 , 5 , 5 b) 17 , 8 , 15

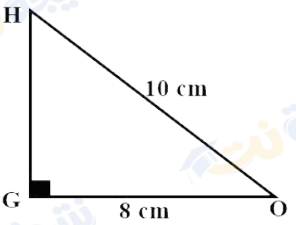
c) 3 , 5 , 6 d) 4 , 7 , 7

Second- Answer the following:

1) In the opposite figuer:
Find the value of **X** ,
then find the perimeter of the triangle ABC

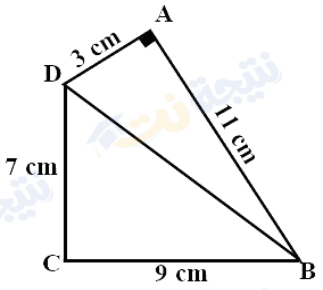


2) In the opposite figuer:
what is the area of the square constucted on the side $\overline{HG}$?



3) Determine the type of the triangle respect to its angles if the lengths of its sides are:
10 cm , $10\sqrt{3}$ cm , 20 cm

4) In the opposite figuer:
Prove that: $m(\angle C) = 90^{\circ}$



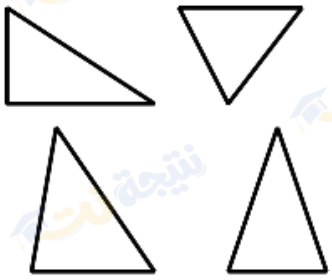
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Unit Three	Week	Lesson 3: Applications of parallelism	Date: / /

Class performance:

Actitvity (1): The world of triangles

Draw triangles with different side lengths using geometry tools,
then draw a midline segment connecting the midpoints of two sides
and find their length using a ruler.
Find the relationship between the length of this segment
and the length of the third side of the triangle.

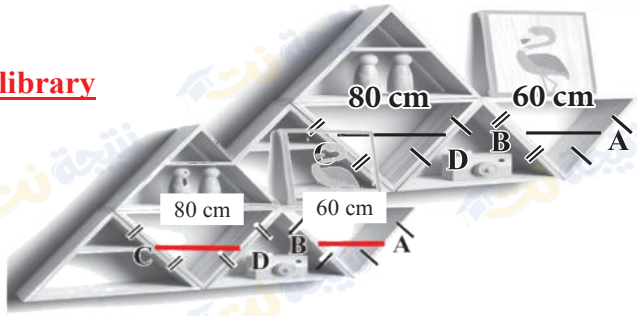


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Activity (2): Wooden library

Khaled designed a wooden library,
then he wanted to make more shelves in the library.
Find the length of the shelves $\overline{AB}$, $\overline{CD}$

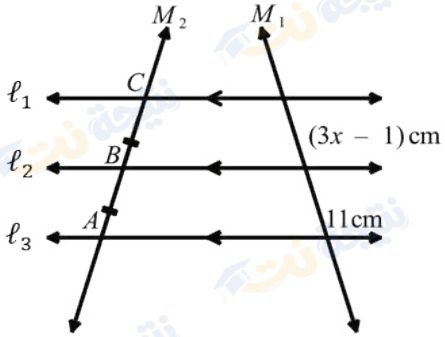


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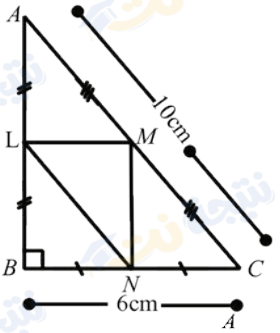
Home performance (Homework):

(1) In the opposite figure:
Find the value of x

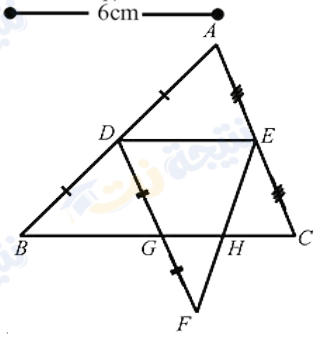


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(2) In the opposite figure:
The sides of triangle LMN are the medains of the right angled triangle ABC at B
Find with proof the perimeter of $\Delta\ LMN$



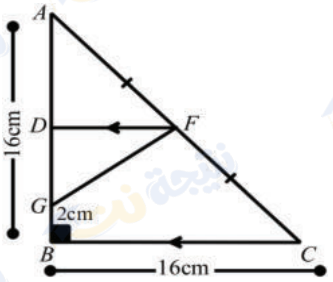
(3) In the opposite fiure:
D is midpoint of $\overline{AB}$, E is the midpoint of $\overline{AC}$, G is the midpoint of $\overline{DF}$
Find with proof:
The length of $\overline{HG}$



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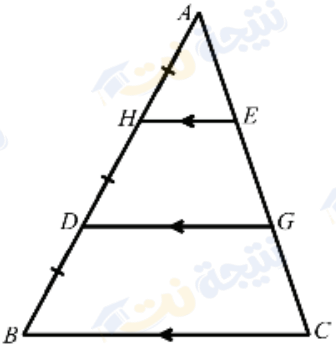
In the opposite figure:
$m\ (\angle B) = 90°$, AB = BC = 16 cm,
GB = 2 cm, F is the midpoint of $\overline{AC}$,
$\overline{DF}$ // $\overline{BC}$
Find with proof:
The length of $\overline{GF}$



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(4) In the opposite figure:
If AC = 15 cm, find:
The length of $\overline{AE}$, $\overline{AG}$



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End of second month exercises

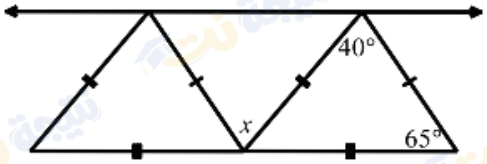
First: Choose the correct answer from the given ones:

(1) If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab?

a) 2 b) 12 c) 35 d) 17

(2) In the opposite figure:

What is the value of x?



a) 40 b) 25

c) 75 d) 105

(3) If $(x - 2)(x + 5) = 0$, which of the following is correct?

a) $x = 2$ *or* $x = 5$ b) X = -2 or x = 5

c) $x = -2$ *or* $x = -5$ d) $x = 2$ *or* $x = -5$

(4) If the polynomial $(kx^2 + 20x + 25)$ is a perfect square, what is the value of k?

a) 9 b) 4 c) 1 d) 2

e)

Second: Answer the following questions

Factorize each of the following compeletly:

1) $x^2 + x - 30$ 2) $6x^3 - 60x - 2x^2$

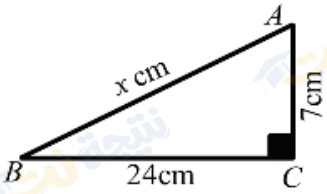
3) $3x^2 + 14x + 15$ 4) $16x^4 - y^4$

5) $5x^5 + 40x^2$ 6) $m^2 + 4m + km + 4k$

7) $x^4 + 4y^4$ 8) $a^2 + 2ab + b^2 - 36$

9) If the polynomail $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b?

10) If $a + b = 5$, $a^2 - b^2 = 15$, then what is the value of $a - b$



11) In the opposite figure:

What is the value of x?

12) If $(x - 5)$ is one of the factors of the polynomial $(2x^2 - 7x - 15)$, what is the other factor?

13) If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, then what is the value of $a + b$?

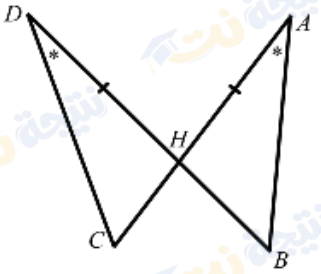
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14) In the opposite figure:

$m(\angle A) = m(\angle D)$, $HA = HD$

$\overline{CA} \cap \overline{DB} = \{H\}$,

prove that $\Delta AHB \cong \Delta DHC$



15) Determine the triangle according to its angles if the lengths of its sides are 12 cm, 10 cm, and 7 cm.

➢ Find the solution set for each of the following equations in R:

16) $x^2 - 6x + 8 = 0$

17) $x^3 + x^2 - 2x = 2$

18) $x^3 = 81x$

19) $4x^2 + 20x = -25$

20) $a^2 + 11a - 12 = 0$

21) $4x^2 = 25$

22) Use factorization to calculate the value of each of the following:

a) $(98)^2 - 4$

b) $(55)^2 + 2 \times 55 \times 45 + (45)^2$

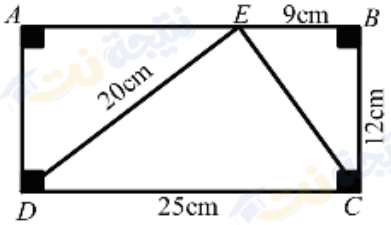
23) If $x^2 - y^2 = 10$, $x - y = -2$, find the numerical value of the expression $x + y$

24) In the opposite figure:

ABCD is a rectangle, prove that:

ΔDEC is a right angled triangle,

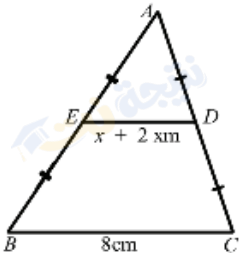
then find its perimeter



25) A rectangle whose length is 4 cm, more than its width, if its area is 21 cm^2 , find its perimeter.

26) In the opposite figure:

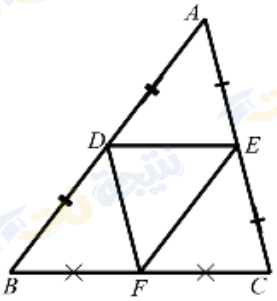
What is the value of x?



27) In the opposite figure:

If the perimeter of $\Delta ABC = 18\ cm$,

What is the perimeter of ΔDEF?



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Unit Three	Week	Lesson 4: Medians of the triangle	Date: / /

Class performance:

Actitvity (1): Aswan Suspension Bridge

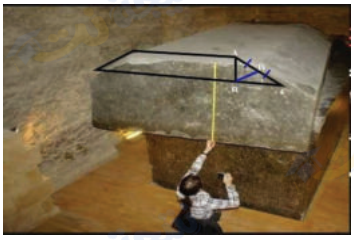


Hussein went on a trip to the city of Aswan to see its landmarks and saw the Aswan suspension Bridge, cooperate with your group in drawing different triangles half the sides of the triangles, half the sides of the triangles connect each vertex to the midpoint of the side opposite this vertex, ask each student in your group to write what he notices

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Activity (2): The temple of serapium



This is a picture of one of the huge granite sarcophagi from the tample. The lid of the sarcophagus weighs about 30 tons, the sarcophagus it self weighs about 70 tons. It was moved from the "serapium" by pulling it with ropes in the Giza area. Switch roles with your colleague to help him with the following:

Draw different right angled triangles, draw a median from the vertex of the right angle of the hypotenuse and find the relationship between them, what do you and your colleague notice?

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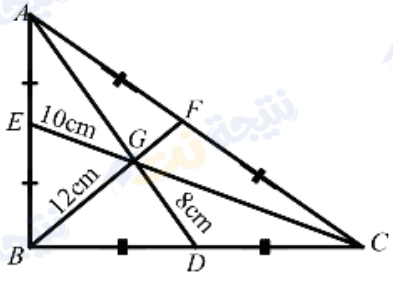
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Home performance (Homework):

(1) In the opposite figure:

G is the intersection point of the medians of ΔABC, GB = 12 cm, GE = 10 cm, and GD = 8 cm.

Find the length of $\overline{GC}$, $\overline{GA}$, $\overline{BF}$



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(2) In the opposite figure:

$\overline{BD}$ is a median of $\Delta\ ABC$

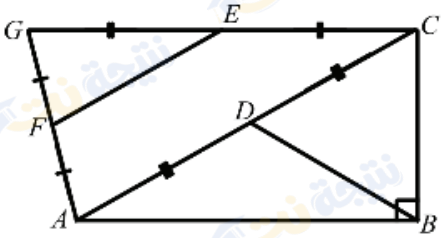
Where $m\ (\angle\ B) = 90°$

E is the midpoint if $\overline{GC}$

F is the midpoint if $\overline{GA}$

AC = 16 cm, find:

The length of $\overline{BD}$ and $\overline{EF}$

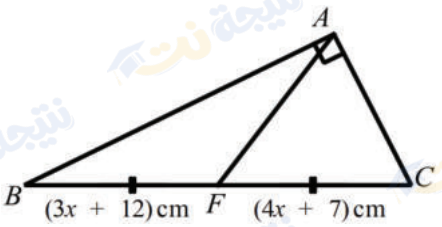


Answer the following questions:

(3) In the opposite figure:

$\Delta\ ABC$ is right angled triangle at A

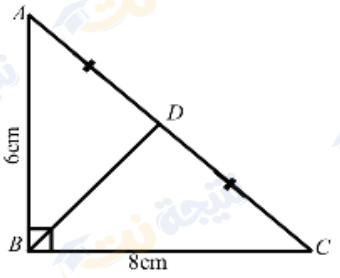
$\overline{AF}$ is a median, find the length of $\overline{AF}$



(4) In the opposite figure:

$\Delta\ ABC$ is right angled triangle at B

$\overline{BD}$ is a median, find the length of $\overline{BD}$

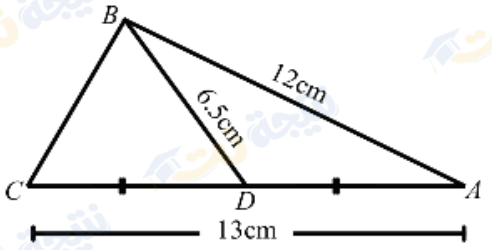


(5) In the opposite figure:

$\overline{BD}$ is a median in $\Delta\ ABC$

Prove that $\Delta\ ABC$ is a right angled Δ

Then find the area of $\Delta\ ABC$



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Weekly assessment Week .....

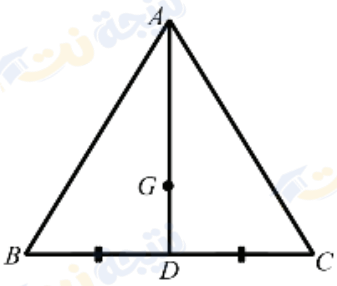
Group (A)

First: Choose the correct answer:

(1) In the opposite figure:

$\overline{AD}$ is a median in ΔABC ,
G is the point of intersection
of the medians of the triangle,
AD = 15 cm, then AG = ... cm.

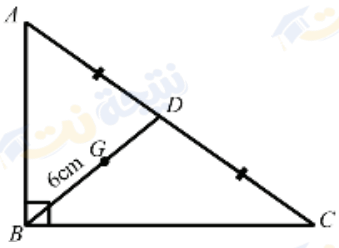
a) 5 b) 10 c) 12 d) 9



Second: Answer the following:

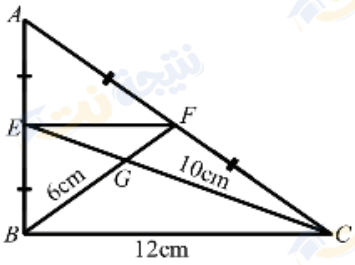
(1) In the opposite figure:

$\overline{BD}$ is a median in the right angled triangle ABC at (B), G is the point of intersection of the medians of the triangle, BG = 6 cm, then AC = ... cm.



(2) In the following figure:

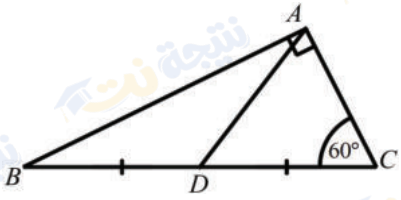
If E and F are the midpoints of
$\overline{AB}$ and $\overline{AC}$ respectively
CG = 10 cm, BC = 12 cm, GB = 6 cm.
Find the perimeter of ΔEFG



(3) In the following figure:

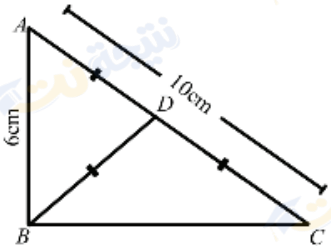
$\overline{AD}$ is a median in ΔABC

$m(\angle A) = 90°$,BC = 10 cm
AC = DC find the perimeter of ADC



(4) In the opposite figure:

$\overline{BD}$ is a median in ΔABC,
AC = 10 cm, AB = 6 cm, AD = BD,
Prove that: ΔABC is a right angled Δ,
then the area of ΔABC



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Performance and assessments

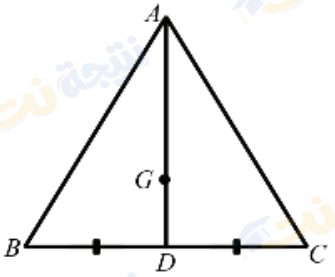
Group (B)

First: Choose the correct answer:

(1) In the opposite figure:

$\overline{AD}$ is a median in Δ ABC,
G is the point of intersection
of the medians of the triangle
AD = 15 cm, then GD = ……

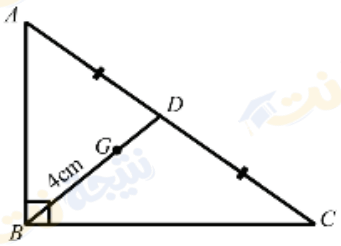
a) 5 b) 9 c) 10 d) 12



Second: Answer the following:

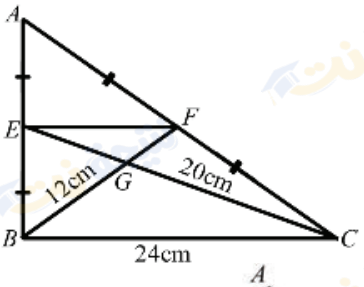
(1) In the opposite figure:

$\overline{BD}$ is a median in the right angled triangle ABC at B, G is the point of intersection
of the medians of the triangle BG = 4 cm,
then AC = …… cm.



(2) In the following figure:

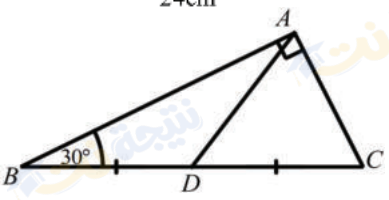
If E and F are the midpoints of
$\overline{AB}$ and $\overline{AC}$ respectively
BC = 24cm, GC = 20 cm,
BG = 12 cm, find the perimeter of Δ EFG



(3) In the following figure:

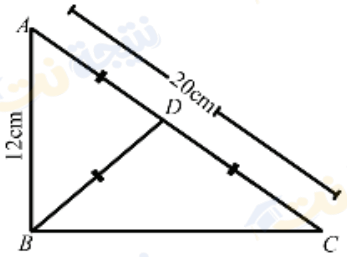
$\overline{AD}$ is a median in Δ ABC

$m(\angle A) = 90°$, BC = 14 cm
AC = DC find the perimeter of ADC



(4) In the opposite figure:

$\overline{BD}$ is a median in Δ ABC,
AC = 20 cm, AB = 12 cm, BD = AD,
Prove that: Δ ABC is a right angled Δ,
then the area of Δ ABC

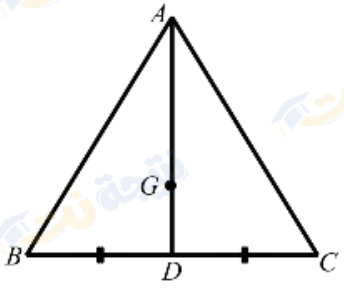


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Group (C)

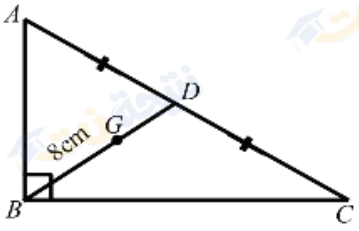
First: Choose the correct answer:

(1) $\overline{AD}$ is a median in ΔABC,
G is the point of intersection of the medians
of the triangle, AD = 30 cm, then GD = …… cm.
a) 5 b) 10 c) 15 d) 20

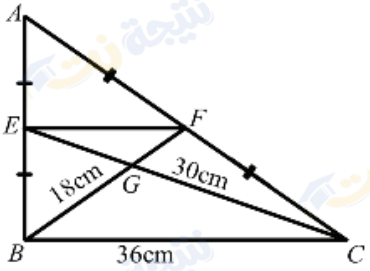


Second: Answer the following:

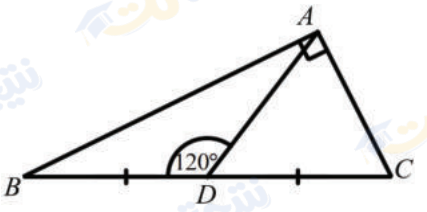
(1) In the opposite figure:
$\overline{BD}$ is a median in the right angled ΔABC at B
G is the point of intersection of the medians
of the triangle, BG = 8 cm, then AC = …… cm.



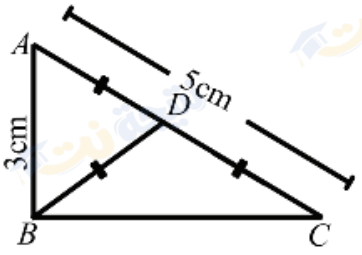
(2) In the following figure:
If E and F are the midpoints
of $\overline{AB}$ *and* $\overline{AC}$ respectively
BC = 36 cm, GC = 30 cm, CB = 18 cm.
Find the perimeter of ΔEFG



(3) In the following figure:
$\overline{AD}$ is a median in ΔABC
$m(\angle A) = 90°$, BC = 12 cm
AC = DC
find the perimeter of ADC



(4) In the opposite figure:
$\overline{BD}$ is a median in ΔABC,
AC = 5 cm, AB = 3 cm, AD = BD,
Prove that: ΔABC is a right angled Δ,
then the area of ΔABC



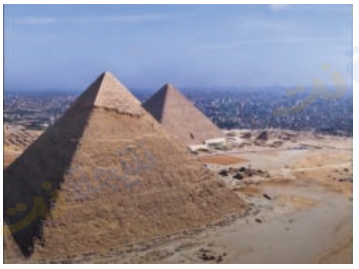
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Unit Three	Week	Lesson 5: Isosceles triangle	Date: / /

Class performance:

Actitvity (1): The Great pyramid

- In front of you is a picture of great pyramid, one of the seven wonders of the world, its original height is 146.5 meters, and the length of each side of its base is 230.4 meters.
- You and your group should work together to draw different isosceles triangles bisect the base of the triangles and connect each vertex to the midpoint of the base.
- Ask each dtudent in your group to write down what they observe.



Activity (2): Thirty and sixty triangle

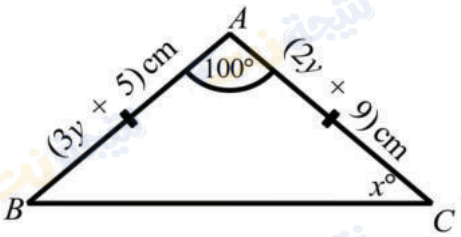
- Take turns with your colleague to draw different right angled triangles where the measure of one angle in each triangle is 30°, find the length of the side opposite the angle 30° and the length of the hypotenuse, and find the relationship between them, what do you and your colleague observe



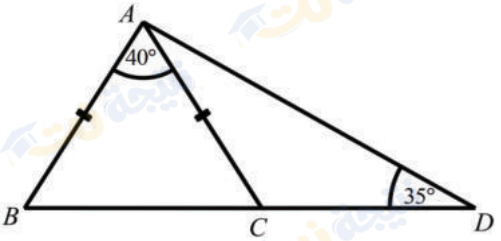
Home performance (Homework):

Answer the following questions:

(1) In the following figure:
Find the value of x and y

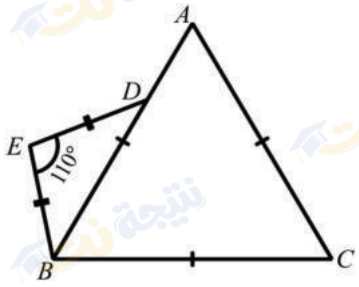


(2) In the following figure:
Prove that:
ΔACD is an isosceles triangle.

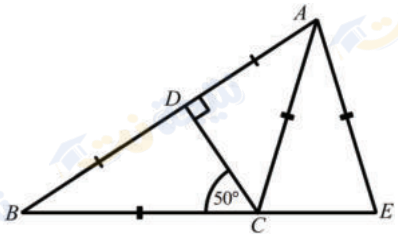


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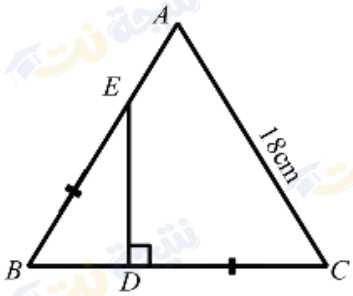
(3) In the following figure:
ΔABC is an equaliteral triangle,
$m \angle E = 110°, EB = ED$
Find: $m \angle EBC$



(4) In the following figure:
BC = AE = AC, DB = DA
$\overline{CD} \perp \overline{AB}, m(\angle BCD) = 50°$
Find: $m(\angle BAE)$



(5) In the opposite figure:
ΔABC is an equaliteral triangle,
AC = 18 cm, BE = CD, $\overline{ED} \perp \overline{BC}$
Find with proof: The length of $\overline{BD}$



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Unit Three | Week ..... | Lesson 6: Interior and Exterior angles of polygons | Date: / /

Class performance:

Actitvity (1): Geometry carpets

In front of you is a picture of geometric decorations, you and your group should work together to draw different polygons, and calculate the sum of the measures of the interior and exterior angles of these polygons, ask each student in your group to write down what they observe.



Activity (2): Ancient Egyptian coins

Take turns with your colleague to calculate the number of diagonals of the polygon shown on the Egyptian coin in front of you, then work together to draw different polygons and calculate the number of diagonals you and your colleague conclude the relationship between the number of sides and the number of diagonals.

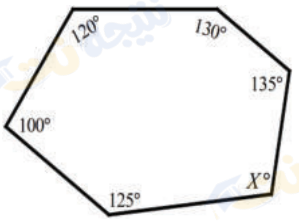


Home performance (Homework):

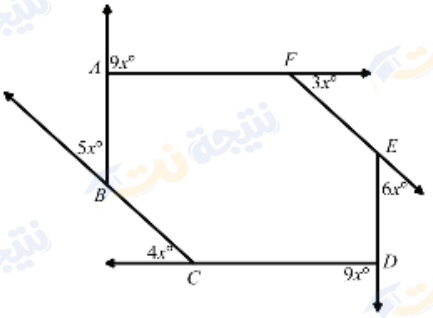
Answer the following questions:

(1) Find the number of sides of the convex polygon whose sum of interior angles is $540°$

(2) In the following figure:
Find the value of X



(3) In the following figure:
Find: $m\ (\angle BCD)$



(4) Find the number of sides of regular polygon whose interior angle measure is $144°$

(5) Find the number of sides of convex polygon that has 20 diagonals.

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Weekly assessment Week .....

Group (A)

First: Choose the correct answer from the given ones:

(1) The sum of the measures of the interior angles of a convex heptagon = ...

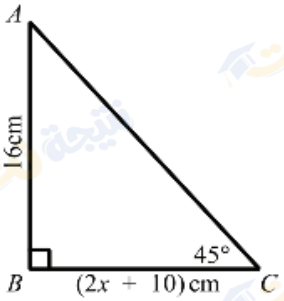
a) 900° b) 720°

c) 540° d) 360°

Second: Answer the following questions:

(2) In the opposite figure:

The value of x = ...

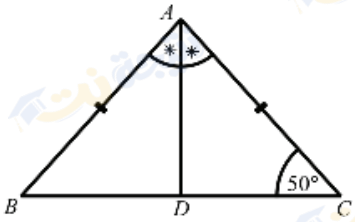


(3) In the following figure:

AB = AC, $m(\angle C) = 50°$

$\overline{AD}$ bisects $(\angle A)$,

Find with proof: $m(\angle CAD)$

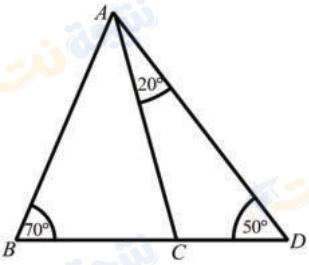


(4) In the following figure:

$m\angle B = 70°, m\angle D = 50°$,

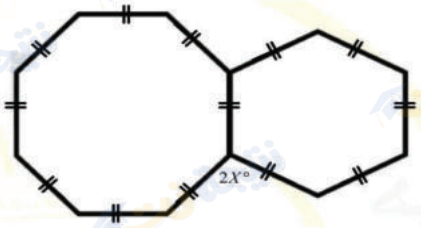
$m(\angle CAD) = 20°$,

Prove that: $\Delta\, ABC$ *is an isoscales* Δ



(5) In the opposite figure:

Find with proof the value of x



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Group (B)

First: Choose the correct answer from the given once:

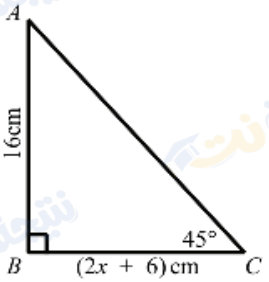
(1) The sum of the measure of the interior angles of convex hexagon = ……

a) 900° b) 720° c) 540° d) 360°

Second: Answer the following questions:

(2) In the opposite figure:

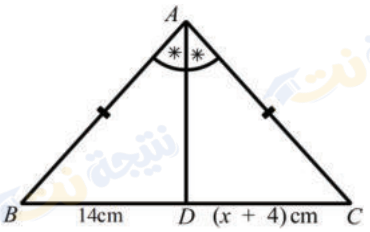
The value of x = ……



(3) In the following figure:

AB = AC, BD = 14 cm,

$\overline{AD}$ bisects $\angle A$, find with proof the value of x

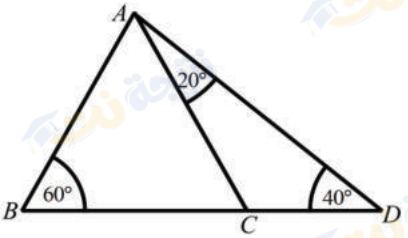


(4) In the following figure:

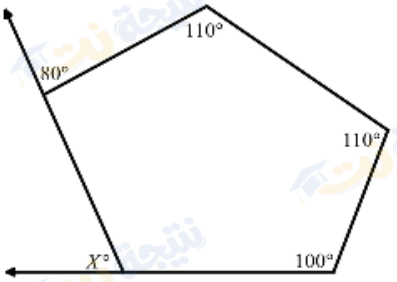
$m(\angle B) = 60°$, $m(\angle CAD) = 20°$

$m(\angle D) = 40°$, Prove that:

ΔABC is an equilateral triangle.



(5) Find with proof the value of X



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Group (C)

First: Choose the correct answer from the given once:

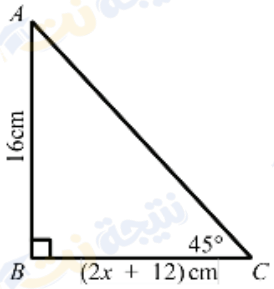
(1) The sum of the interior angles of a covex pentagon is ……

a) 900° b) 720° c) 540° d) 360°

Second: Answer the following questions:

2) In the opposite figure:

What is the value of x ?

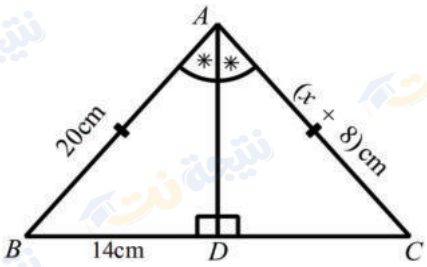


(2) In the following figure:

$\overline{AD} \perp \overline{BC}$, BD = 14 cm,

$\overline{AD}$ $bisects \angle A$,

Find: with proof the value of x

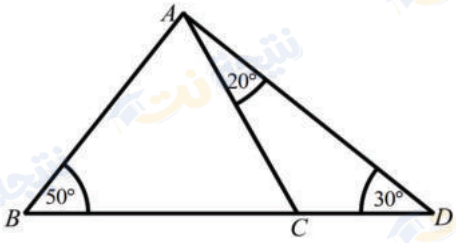


(3) In the following figure:

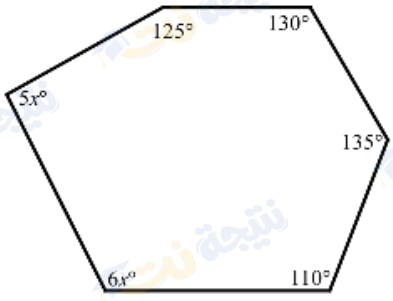
$m(\angle B) = 50°$, $m \angle D = 30°$,

$m(\angle CAD) = 20°$,

Prove that: ΔABC is an isoscales triangle



(4) Find with proof the value of x



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Unit Four | Week ..... | Lesson 1 : Ascending cumulative frequancy table and its graphical representation | Date: / /

Class performance:

Activity (1) (Who is the first?)



One day, the mathematics teacher get in the class , the teacher extracted the answer papers of the students in the monthly exam from his bag to distribute them on the students. He asked from one of the students to record the marks of all students on the board:

55 10 23 ....
....
....
....

- Try by yourself to answer the following questions ,then compare your answer with the answer of your colleague:

1- How many students are in the class?
2- What is the smallest mark obtained by a student?
3- What is the largest mark obtained by a student?
4- What is the number of students who obtained marks belongs to the interval [0 , 10 [?
5- What is the number of students who obtained marks belongs to the interval [10 , 20 [?

- Divide the class into homogeneous groups then distribute the table into each group::

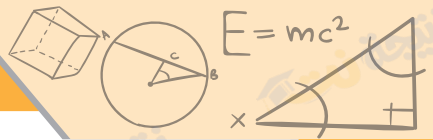
.....	0 -	10 -	20 -	30 -	40 -	50 -
.....	.....	.....	.....	.....	.....	.....

In collaboration with your group member , complete the table.

The teacher asked one of the students ,how many students obtained markes less than 40 marks?

In a direct methoud using the table , help the student to obtain the answer

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Activity (2) (Where are you?)

In collaboration with your colleague,complete the following table"

The number of students who get less than 10 marks	
The number of students who get less than 20 marks	
The number of students who get less than 30 marks	
The number of students who get less than 40 marks	
The number of students who get less than 50 marks	
The number of students who get less than 60 marks	

Try by yourself to represent the data in the previous table graphically

Home performance (Homework):

Answer the following questions:

(1) Form the frequancy table with sets to represent the following data:

38	11	21	39	11	33	40	10	47	25
39	35	15	18	20	33	14	8	43	35
27	19	32	39	12	33	40	10	27	42

Use the intervals (10- , 20- , …….)

(2) The following table shows the height of 100 students in centemeter from one of the schools:

Height in centemeter	110 -	115 -	120 -	125 -	130 -	135 -	140 -	Sum
Number of students	5	12	17	28	18	14	6	100

From the table , answer the following:

1- What is the number of students whose heights are less than 110 cm ?

2- What is the number of students whose heights are less than 140 cm ?

(3) From the data of the table in question (2) ,form the ascending cumulative frequancy table and represent it graphically .

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(4) The following table shows the wages of 50 workers:

Sets	110 -	120 -	……..	140 -	150 -	Sum
Number of workers	8	9	10	……..	11	50

Requirements :

1- Complete the blanks in the table

2- Form the ascending cumulative frequancy table and represent it graphically .

(5) The opposite stem and leaves digram shows the masses in kelograms for 20 students in one of classrooms.

Stem	Leaves
2	5 6
3	0 2 3 5 5
4	2 4 6 6 7 9
5	1 4 7 8 8
6	0 1

Key: 3|0 means 30

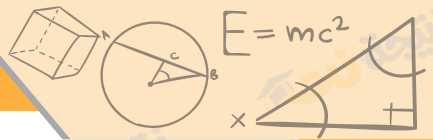
1- Form the frequancy table with sets using the equal intervals (20 - , 30 - , …….)

2- Form the ascending cumulative frequancy table

3- Find the percentage of the number of students whose masses are less than 40 kilograms

4- Represent the data using the ascending cumulative frequancy curve

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Weekly assessment: Week …….
Group (A)

First: choose the correct answer from those given:

The opposite table represents the ascending cumulative frequancy table for the marks of 40 students in prep two stage

(1) The number of students who obtains marks less than 40 marks equals …….. students

(a) 5 (b) 14 (c) 10 (d) 24

Upper bounderies of sets	ascending cumulative frequancy
less than 10	0
less than 20	5
less than 30	14
less than 40	24
less than 50	36
less than 60	40

Secound : The following table shows the frequancy distribution for the dailly studing hours for a set of students :

Sets	1 -	2 -	……..	4 -	5 -	Sum
Number of workers	5	8	12	9	6	……

From the previous table , answer the following:

1- Complete the blanks in the table
2- Form the ascending cumulative frequancy table.
3- Represent the data using the ascending cumulative frequancy curve
4- Find the number of students whose studying hours are less than 4 hours.

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Group (B)

First: choose the correct answer from those given:

The opposite table represents the ascending cumulative frequancy table for the marks of 40 students in prep two stage

(1) The number of students who obtains marks less than 30 marks equals …….. students

(a) 5 (b) 14 (c) 19 (d) 30

Upper bounderies of sets	ascending cumulative frequancy
less than 10	0
less than 20	5
less than 30	14
less than 40	24
less than 50	36
less than 60	40

Secound : The following table shows the frequancy distribution for the dailly studing hours for a set of students :

Sets	2 -	3 -	4 -	…..	6 -	Sum
Number of workers	6	9	12	8	5	……

From the previous table , answer the following:

1- Complete the blanks in the table
2- Form the ascending cumulative frequancy table.
3- Represent the data using the ascending cumulative frequancy curve
4- Find the number of students whose studying hours are less than 3 hours.

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Group (C)

First: choose the correct answer from those given:

The opposite table represents the ascending cumulative frequancy table for the marks of 40 students in prep two stage

(1) The number of students who obtains marks less than 50 marks equals …….. students

(a) 43 (b) 36 (c) 24 (d) 4

Upper bounderies of sets	ascending cumulative frequancy
less than 10	0
less than 20	5
less than 30	14
less than 40	24
less than 50	36
less than 60	40

Secound : The following table shows the frequancy distribution for the dailly studing hours for a set of students :

Sets	1 -	2 -	……-	4 -	5 -	Sum
Number of workers	7	9	11	8	5	……

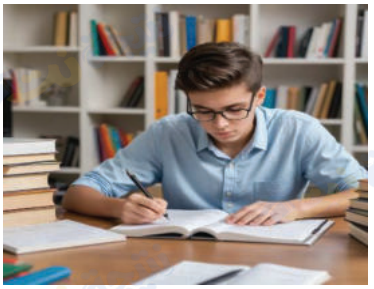
From the previous table , answer the following:

1- Complete the blanks in the table
2- Form the ascending cumulative frequancy table.
3- Represent the data using the ascending cumulative frequancy curve
4- Find the number of students whose studying hours are less than 2 hours.

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Unit Four | Week ..... | Lesson 2: Measurments of the centeral tendency for the frequancy table with intervals | Date: / /

Class performance:



Activity (1) (The Success Way)

The mathematics teacher get in the class and choose one row from the rows of the class that contains 11 students ,He askes each student from it separatelly about the number of hours he/She spend in studing each day.

The answers was as following:

2 , 4 , 3 , 5 , 2 , 3 , 4 , 1 , 3 , 5 and 3

Arrange these values in an ascending order

Compare your work with your colleague's work

Answer by your self on the following questions:

1- The arithmetic mean for that values

2- The most repeated value

3- The value lies at the meddile of the values

Dicuss your answers with your group

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Home performance (Homework):

Answer the following questions:

(1) If $\sum f = 50$ *and* $\sum(f \, . x_m) = 1700$,find the arithmetic mean $\bar{x}$

(2) The following frequancy table shows the distribution of marks of 50 students in Mathematics

Marks	10 -	20 -	30 -	40 -	50 -	Sum
Frequancy	8	9	12	14	7	50

find the arithmetic mean of the marks of the students

The following table shows the frequancy distribution for the dailly studing hours for 50 students:

Hours	1 -	2 -	3 -	4 -	5 -	6 -	7 -
Frequancy	3	4	6	12	14	6	5

From the previous table , answer the following:

(3) Form the ascending cumulative frequancy table.,then estimate the median for its data

(4) Represent graphically the ascending cumulative frequancy curve for these data ,then find the median from the curve

(5) Find the mode for the following frequancy distribution using the histogram

Sets	5 -	10 -	15 -	20 -	25 -
Frequancy	5	10	12	10	2

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Weekly assessment: Week .....

Group (A)

First: choose the correct answer from those given:

(1) If $\sum f = 20$ *and* $\sum(f \cdot x_m) = 100$, then the arithmetic mean $\bar{x}$ = ...

(a) 120 (b) 80 (c) 50 (d) 5

Secound : The following table shows the frequancy distribution for the marks of 100 students in math exam:

Marks	10 -	20 -	30 -	40 -	50 -
Frequancy	10	20	30	24	16

From the previous table , answer the following:

1- Estimate the arithmetic mean
2- Form the ascending cumulative frequancy table and represent it graphically ,then find the median
3- Represent the data using the the histogram ,then find the mode
4- Find the mode for the opposite frequency distribution

Marks	10	20	30
Frequancy	5	12	8

Group (B)

First: choose the correct answer from those given:

(1) If $\sum f = 20$ *and* $\sum(f \cdot x_m) = 200$,then the arithmetic mean $\bar{x}$ = ...

(a) 200 (b) 180 (c) 50 (d) 10

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Secound : The following table shows the frequancy distribution for the marks of 100 students in math exam:

Marks	10 -	20 -	30 -	40 -	50 -
Frequancy	12	30	20	24	14

From the previous table , answer the following:

1- Estimate the arithmetic mean
2- Form the ascending cumulative frequancy table and represent it graphically ,then find the median
3- Represent the data using the the histogram ,then find the mode
4- Find the mode for the opposite frequency distribution

Marks	10	20	30
Frequancy	15	12	8

Group (C)

First: choose the correct answer from those given:

(1) If $\sum f = 20$ and $\sum(f \, . \, x_m) = 500$,then the arithmetic mean $\bar{x}$ = ...

(a) 25 (b) 100 (c) 480 (d) 520

Secound : The following table shows the frequancy distribution for the marks of 100 students in math exam:

Marks	10 -	20 -	30 -	40 -	50 -
Frequancy	15	24	30	20	11

From the previous table , answer the following:

1- Estimate the arithmetic mean
2- Form the ascending cumulative frequancy table and represent it graphically ,then find the median
3- Represent the data using the the histogram ,then find the mode
4- Find the mode for the opposite frequency distribution

Marks	9	12	15
Frequancy	20	18	23

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General Revision

First: choose the correct answer from those given

(1) Which of the following numbers is an irrational number lies between 3 and 4 ?
(a) $\sqrt{11}$ (b) 3.5 (c) $\sqrt[3]{12}$ (d) $\sqrt{7}$

(2) The sum of the measures of the exterior angles of a convex hexagon = ……..°
(a) 900 (b) 720 (c) 540 (d) 360

(3) What is the value of: $4^2 + 4^2 + 4^2 + 4^2$?
(a) 4^2 (b) 4^8 (c) 4^3 (d) 4^{16}

Second: Answer the following questions:

1) Using the number line ,represent the two intervals $X = [-2, 5]$, $Y]-4, 2]$ then find: 1) $X \cup Y$ 2) $X \cap Y$ 3) $X - Y$

2) Find the solution set of the following equations in R:
1) $x^2 + x = 20$ 2) $x^3 = 36x$

3) If the polynomial ($x^2 + 14x + k$) is a perfect square ,then what is the value of K ?

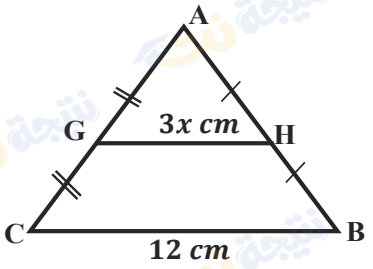
4) ABC is a triangle in which $m(\angle A) = 80^\circ$, $m(\angle C) = 50^\circ$,then ΔABC ia a/an …… triangle

5) 5) What is the multiplicative inverse of $\sqrt{5}$ -2 ?

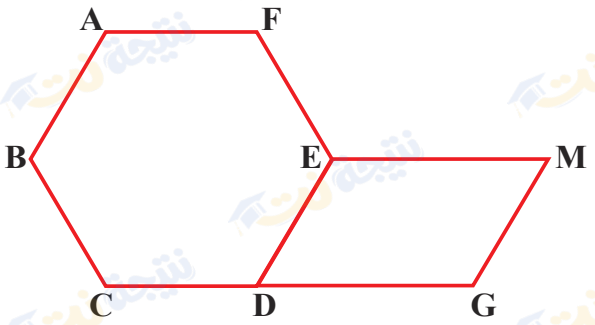
6) If $x^2 - y^2 = 8, x - y = 2$, what is the arithematic mean of the two numbers x and y ?

7) If the upper bound of a set is 18 and its centrer is 16 ,then what is its lower bound?

8) In the opposite figure, what is the value of x?



9) In the opposite figure: $ABCDEF$ is a regular hexagon, $EDGM$ is a parallelogram
Find with proof: $m(\angle FEM)$



10) Simplify to its simplest form:
$\sqrt{72} + \sqrt[3]{54} - \sqrt{50} - \sqrt[3]{16}$

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Factorize the following completely:

11) $x^2 + 7x - 8$

12) $a^4 + 27a$

13) $36ab - 24ab^2 - 18a^2b$

14) $3x^2 + 8x + 4$

15) $\frac{1}{3}a^2 - 3$

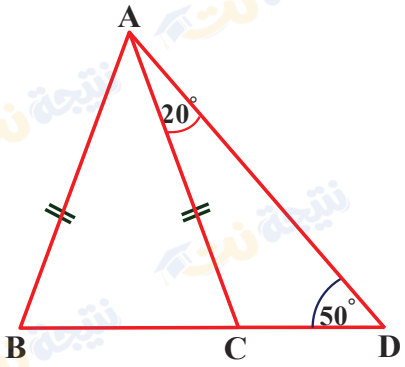
16) $49 - (x + y)^2$

17) $m^2 + 25n^2 + 10mn - 36$

18) $z^4 + 64$

19) If $:a + b = 2, \frac{1}{2}ab = 10$ *and* $a^2 + b^2 = 21$,find the numerical value of the expression: $a^3 + b^3$

20) In the opposite figure: $AB = AC$,
$m(\angle D) = 50^\circ, m(\angle CAD) = 20^\circ$
Find: $m(\angle BAD)$



21) Determine the type of the triangle according to its sides ,if its side's lengths are $4\ cm, 20\ cm$ *and* $21\ cm$

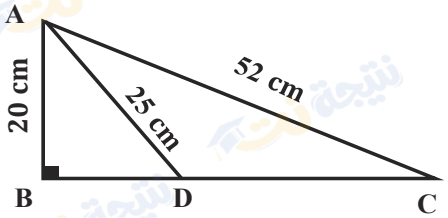
22) Simplify the following expression to its simplest form :

$\frac{(\sqrt{5})^{2n+3}}{(\sqrt{2})^{1-n} \times (\sqrt{10})^{n+1}}$,then find the value of the result at $n = 0$

23) Find the arithmetic mean for the following frequancy distribution:

Sets	5 -	15 -	25 -	35 -	45 -	sum
Frequancy	7	10	12	13	8	50

24) In the opposite figure:
Find with proof ,the length of $\overline{DC}$



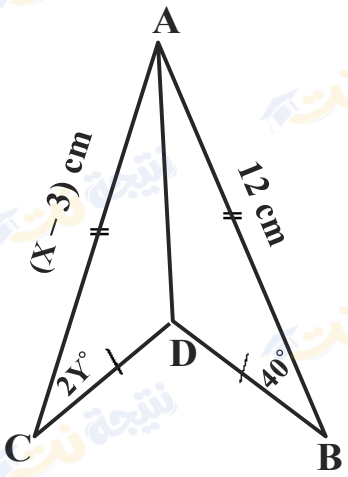
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Sets	2 -	6 -	10 -	14 -	18 -	22-	26-	sum
Frequancy	4	6	11	12	k	8	5	60

25) From the following frequancy table :

1) Find the value of k
2) Form the ascending cumulative frequancy table and represent it graphically ,then find the median

26) In the opposite figure:
   1) Prove that: $\Delta\, ADB \cong \Delta\, ADC$
   2) Find the value of each of X and Y



27) If : $x = (\sqrt{2} - \sqrt{3})$,then find $x - \frac{1}{x}$ in its simplest form

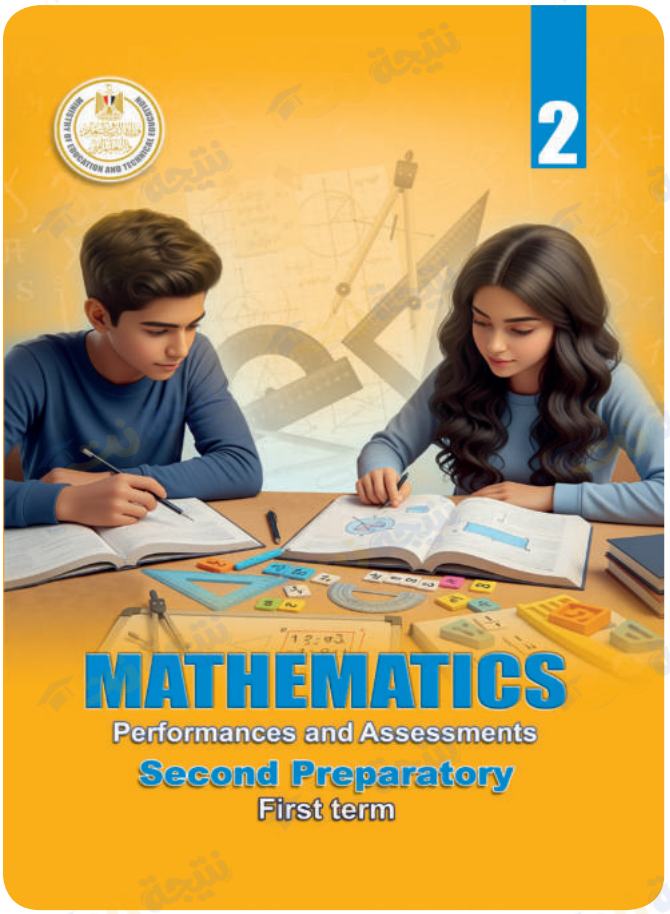
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