United Arab Emirates
Ministry of Education

الإمـــارات العـربيـة المتحدة
وزارة التـربيــة والتعليـــم

Subject: Mathematics

Number of Pages: (7)

Grade: 8

Stream: General

End of Term 1 Exam
Academic Year 2017/2018

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Question 1 Circle the letter corresponding to the correct answer:

1) Evaluate the expression $m^2 - 2n$ if $m = -5$, $n = 4$.

   a) 48   b) 17   c) 36   d) 18

2) Write $\dfrac{4}{9}$ as a decimal.

   a) 0.49   b) 9.4   c) $0.\overline{4}$ d) $4.\overline{9}$

3) Which of the following is equal to $(-6a \times a \times a \times b \times b)$?

   a) $-6a^3b^2$ b) $-6a^4b$ c) $-6a^2b^2$ d) $6a^4$

4) Simplify $(-x^2y^5z)(2x^2z)^3$.

   a) $-8x^8y^5z$ b) $-2x^4y^5z^4$ c) $-2x^8y^5z^4$ d) $-8x^8y^5z^4$

5) What is the missing exponent in the expression $\dfrac{-x^6y^5}{y^3x^\square} = -x^3y^2$?

   a) 2   b) 3   c) 9   d) 5

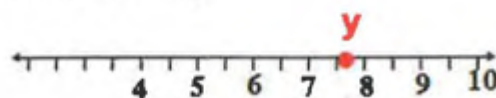6) The expression $5.9 \times \dfrac{1}{10^4}$ can be written as

   a) 59×10^{-4} b) 0.0059 c) 5.9×10^{-4} d) 5.9×10^4

7) The volume of a cube is $\dfrac{1}{8}\ cm^3$. Find in centimeters the length of one side of the cube.

   a) $\dfrac{1}{2}$ b) $\dfrac{1}{64}$ c) 0.8 d) 2

8) Use the number line shown here to estimate the nearest root to y.

   a) $\sqrt{50}$ b) $\sqrt{60}$ c) $\sqrt{75}$ d) $\sqrt{65}$
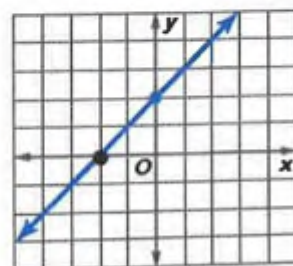
9) The rational number $1\dfrac{3}{7}$ is greater than

   a) $2.\overline{6}$ b) $\sqrt{5}$ c) $\sqrt{7}$ d) $1.\overline{1}$

10) What is the equation of a line with a slope of −3 and a y−intercept of −4 in slope−intercept form?

   a) $y = 4x - 3$ b) $y = -3x - 4$ c) $y = 4x - 3$ d) $y = 3x - 4$

11) What is the equation of the line shown in the graph in point−slope form?

   a) $y + 2 = 1(x - 0)$ b) $y - 2 = 1(x - 2)$
   c) $y - 0 = 2(x - 2)$ d) $y - 0 = 1(x + 2)$

2

12) What is the algebraic solution of the system $\begin{array}{l} x+y=-3 \\ y=x+3 \end{array}$?

a) $x=-3, y=0$

b) $x=0, y=-3$

c) $x=0, y=3$

d) $x=-1, y=-3$

13) What is the value of $\sqrt{\dfrac{49}{64}}$?

a) $\dfrac{9}{8}$

b) $\dfrac{8}{7}$

c) $\dfrac{7}{8}$

d) $\dfrac{7}{4}$

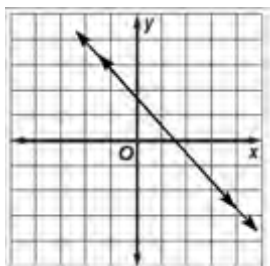14) Which equation represents a direct variation?
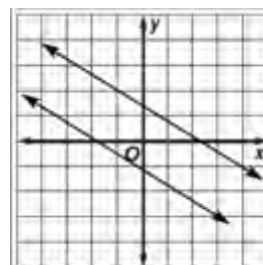
a) $y=4x$

b) $y=-3x+1$

c) $y=4x-3$

d) $y-x=5$

15) Which system of equations has only one solution?

a)

b)

c)

d)

3
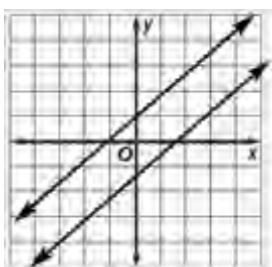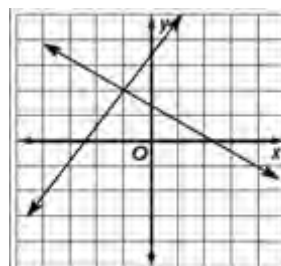
16) Saad 's income varies with the number of papers he delivers, as shown in the graph. Determine the income in AED that Saad receives for every delivered paper.
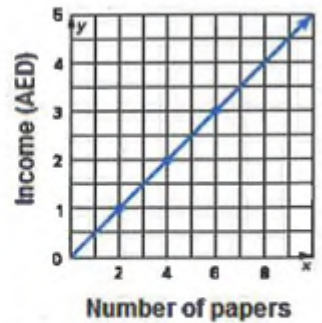
a) $-\dfrac{1}{2}$　　　b) $\dfrac{1}{2}$　　　c) 2　　　d) -2

17) $8 \times 10^3 + 9.7 \times 10^4 =$

a) $(8+97) \times 10^3$　　　　b) $(8+97) \times 10^4$

c) $(0.8+9.7) \times 10^3$　　　d) $(0.8+97) \times 10^4$

18) Write 0.32 as a fraction.

a) $\dfrac{32}{50}$　　　b) $\dfrac{8}{25}$　　　c) $\dfrac{16}{25}$　　　d) $\dfrac{32}{25}$

19) What is the solution of $\dfrac{3}{4}n + 4 = 10$?

a) $n = 2$　　　b) $n = 8$　　　c) $n = 9$　　　d) $n = 5$

20) Write the phrase (one fourth of a given number minus 7 is equal to −1) as an equation.

a) $\dfrac{1}{4}x - 7 = -1$　　b) $\dfrac{1}{4}x = -7x - 1$　　c) $7 - \dfrac{1}{4}x = -1$　　d) $\dfrac{1}{4} = x - 7$

Question 2

show all details in each of your answers

60

21) Find, if possible, the following roots:

$$\sqrt[3]{-0.008} \qquad\qquad \sqrt{-27}$$

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22) The <u>moon</u>'s diameter is about 347.6×10^4 meters, while an average <u>neuron</u>'s diameter is about 0.000005 meter. Write the diameter of <u>both the neuron and the moon</u> in scientific notation.

Moon's diameter: ....   ,   Neuron's diameter: ....

23) Order the following numbers from least to greatest:

$$\{-3.78, \ \sqrt{20}, \ 4.\bar{1}, \ 4.9, \ \sqrt[3]{-64}\}$$

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24) Rashed wants to put wallpaper on the rectangular wall shown below.

How many square meters of wallpaper does he need to cover the whole wall?

6m

(3x−1) m

(2x−4) m

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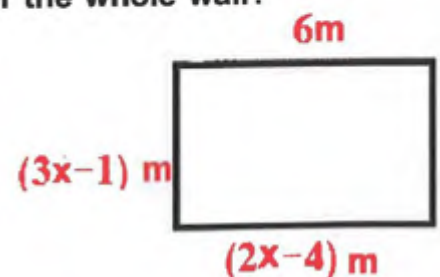
25) Solve the following equations:

$0.8\ x = 6.4$

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$-3 - \dfrac{6}{7} x = -9$

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$\dfrac{k-5}{6} = -8k$

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$-5(3m + 6) = -3(4m - 2)$

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The table shows the cost of electricity needed to run a personal computer per hour. Solve questions (26, 27, 28).

Cost of Electricity to run a personal computer	
Cost (AED)	Time (h)
15	5
24	8
36	12
72	24

26) Determine whether the relation between the two quantities is linear or not. Justify your answer.

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27) If the relation is linear, find the constant rate of change.

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28) Find the cost of running a computer for 7 hours.

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29) Students at the science lab recorded lengths of a stretched spring, as shown in the table. Write the equation of direct variation, then solve it to find the distance stretched in centimeters (x) that results from a mass of 24 grams.

Length of streched spring	
Mass y (gram)	Distance stretched x (cm)
0	0
12	2
30	5
54	9
72	12

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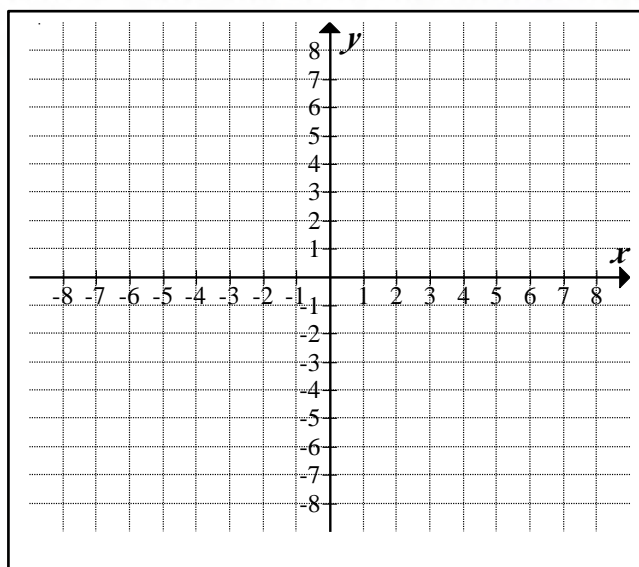
30) Find the x-intercept and y-intercept of the equation $y = \dfrac{1}{2}x + 2$, then use these intercepts to graph the equation.

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End of Exam
Good Luck

Grade 8 Trimester 1 Review

Question (1):

Choose the correct answer:

1. Change the fraction $\frac{3}{8}$ to a decimal

   a) 0.125   b) 0.3   c) 0.37   d) 0.375

2. Write mixed number $2\frac{7}{11}$ as a decimal

   a) 2.636   b) 2.63   c) $2.\overline{63}$ d) 2.6

3. Which linear equation has slope is 2 and y-intercept is 3?

   a) $y - 3 = 2x$ b) $y + 2x = 3$

   c) $y = -3x + 2$ d) $y = -3x - 2$

4. **slope-point form** for a linear equation can be written as

   a) $y = 2x + 3$ b) $y = \frac{2}{5}x$

   c) $3x - 5y = 4$ d) $y - 2 = 3(x - 5)$

5. Evaluate the expression $(g + h)^{12}$ if g = 2 and h = –3.

   a) $- 5^{12}$ b) 1   c) -1   d) 5^{12}

6. The gradient (Slope) of a line passing the two points (-5, 4), (-3, 2) is:

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

7. The solution for this equation $\frac{-3}{4}x = \frac{1}{2}x - 5$ is ......

a) 4   b) -4   c) 7   d) 70

8. Fifth of a number Subtracted from 10 is -8 can be stated in:

   a) $10 - \frac{1}{5}x = -8$ b) $10 + \frac{1}{5}x = -8$

   c) $\frac{1}{5}x - 10 = 8$ d) $\frac{1}{5}x + 10 = 8$

9. Find $3^5 \cdot 3^{-8}$ Express using exponents

   a) 3^{-40} b) 3^3 c) $\dfrac{1}{27}$ d) -27

10. Simplify: $7t^2(-6t^3)$ Express using exponents

   a) $-42\ t^6$ b) $42\ t^{-5}$ c) $- 42\ t^5$ d) $42\ t^5$

11. Simplify: $\dfrac{3^6}{3^{-4}}$ Express using exponents

   a) 3^2 b) 3^{10} c) 3^{-2} d) 3^{-10}

12. write the equation that: Eight more than the quotient of a number and 2 is -6.

   a) $8 + \dfrac{x}{2} = -6$ b) $8 - \dfrac{x}{2} = -6$

   c) $8 + 2 = \dfrac{x}{2}$ d) $8 + \dfrac{x}{2} = 6$

13. if $\dfrac{y^3}{y^\square} = y^8$ then $\square$ = ...

   a) 3   b) 5   c) 11   d) -5

14. The **slope y-intercept Equation** for the line in the graph is:

   a) $y = x + 4$ b) $y = 4x + 1$

   c) $y = -4x + 1$ d) $y = 4x - 3$
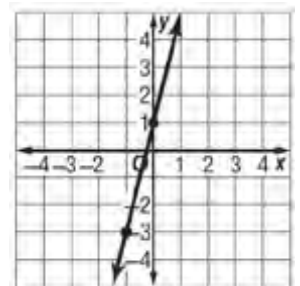
15. The **slope y-intercept Equation** for the line that goes through

two points (2,3) and (3,5) is :

   a) $y = 2x - 1$ b) $y = 2x + 1$

   c) $y + 2 = \dfrac{x}{2}$ d) $y + 2x = 2$

16. Simplify $(-3x^2 y^4)^3$ Express using exponents.

   a) $27\ y^6 y^{12}$ b) $-27\ y^5 y^7$

   c) $-9\ y^6 y^{12}$ d) $-27\ y^6 y^{12}$

17. Find $-\sqrt{49}$ = ...

   a) 7   b) -7   c) ± 7   d) No rea number

18. Which equation represents the graph at the right?

a) $y = -x^2 + 1$

b) $y = x^2 - 1$

c) $y = -x^2 - 1$

d) $y = x^2 + 1$

19. The system equations $y = 2x - 3$ & $y + 5 = 2x$ has ....
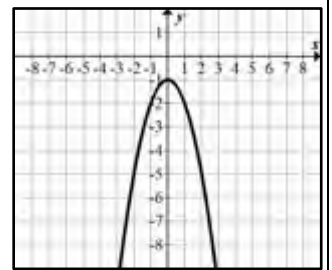
a) One Solution

b) Two Solutions

c) Infinity Solutions

d) No Solutions

21. Which equation represents **Direct variation** relation between x and y ?

a) $y = \frac{3}{5}x$

b) $y = 2x + 3$

c) $y = x^2 + 5$

d) $y = 3x^2$

22. The table shows some ordered pairs that lie in a line.

Which equation could represent the line?

x	0	1	2
y	-2	2	6

a) $y = 2x$

b) $y = 4x - 2$

c) $y = x + 4$

d) $y = 2x - 2$

23. Which graph represent the equation $y = x^2 - 3$

a)

b)

c)

d)
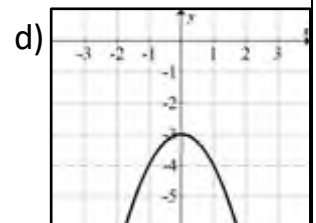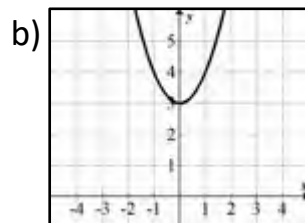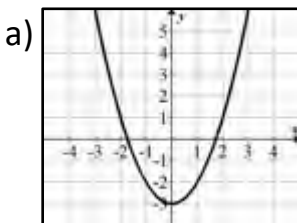
24. Which number best represents the point graphed on the number line?
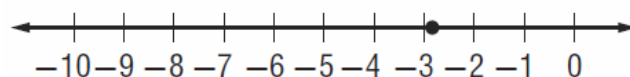
a) $\sqrt{8}$
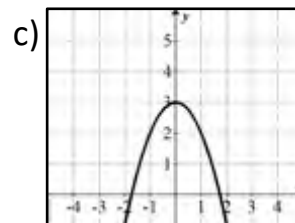
b) $-\sqrt{8}$

c) $\sqrt{-10}$

d) $\sqrt{10}$

25. **Standard** form for a linear equation can be written as

a) $y = 2x + 3$

b) $y = \frac{2}{5}x$

c) $3x = 5y - 4$

d) $3x - 2y = 8$

10

Question (2):

1) Without using calculator Complete:

a) $\sqrt{49}=$ ……

b) $\sqrt[3]{64}=$ ……...

c) $\sqrt[3]{27}+\sqrt{16}=$ ………

d) $\sqrt{81}=$ ……

e) $\sqrt[3]{-8}=$ ……...

f) $(\sqrt{5})^2=$ ………

g) $\sqrt{-25}=$ ……

h) $\sqrt[3]{125}=$ ……...

i) $\sqrt[3]{\dfrac{125}{216}}=$ ………..

2) Estimate $\sqrt[3]{130}$ to the nearest whole number ………………

3) Solve each equation. check your solution.

a) $6y+17=3y-10$

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b) $\dfrac{3}{5}x-15=\dfrac{1}{5}x+12$

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…………………………………………………………

…………………………………………………………

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c) $2(3y-1)=3y-10$

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d) $2\dfrac{1}{3}x=3\dfrac{2}{5}$

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e) $y^2=\dfrac{25}{49}$

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Question (3):

1. **Write each number in standard form:**

a) $2.91 \times 10^5 = $ …………….   B) $5.2277 \times 10^{-3} = $ ………………

2. **Write each number in scientific notation:**

a) $0.00000571 = $ ……………   B) $365\ 000\ 000 = $ ………………….

3. **Evaluate each expression. Express the result in scientific notation.**

a) $(4.5 \times 10^3)(1.6 \times 10^5) = $

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b) $(3.64 \times 10^6) - (2.18 \times 10^6) = $

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………………………………………………………………...………………………………………………

c) $(6.98 \times 10^5) + (1.65 \times 10^7) = $

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………………………………………………………………...………………………………………………

d) $\frac{3.936 \times 10^5}{2.4 \times 10^2} = $ …………………………………………………………………

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4) Order these numbers from the least to the greatest:

$$16000000\ ,\ \ 2.2 \times 10^8\ ,\ \ 3.1 \times 10^5\ ,\ \ 999000$$

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5) Order each set of numbers from least to greatest.

$\{415\%\ ,\ \sqrt{17}\ ,\ 4.1\ ,\ \sqrt[3]{63}\ \ \}$

………………………………………………………………...………………………………………………

6) Find each function value

  a) if $f(x) = 2x - 7$ find $f(-4) = $………………………………………………...……………………

  b) if $f(x) = -3x + 10$ find $f(5) = $………………………………………………...……………………

Question (4):

1. Replace ◯ each with < , >, or = to make a true statement .

a) $2\frac{9}{10}$ ◯ $\sqrt[3]{27}$

b) $\sqrt[3]{3\frac{3}{8}}$ ◯ 1.5

c) $5\frac{2}{5}$ ◯ $\sqrt{36}$

2. Determine whether the relationship between x and y described in each table is proportional. Explain. Write the equation for each table?

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a)

x	y
2	7
4	13
6	19

b)

x	y
1	7
3	21
5	35

Question (5):

The table shows how much Khaled earns per hour.

Working hours (x)	6	8	10
Amount Earned AED (y)	300	400	500

a) Find the rate of change between working hours and the amount earned.

………………………………………………………………………………...……………………………………….

b) Determine whether the relationship between the working hours and amount earned is linear. If not, explain your reasons?

………………………………………………………………………………...……………………………………….

c) Determine whether a proportional relationship exists between working hours and the amount earned. Explain your reasons.

………………………………………………………………………………...……………………………………….

d) How much Khaled will earn if he works for 15 hours?

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e) graph the relationship between Working hours (x)

and Amount Earned AED (y)
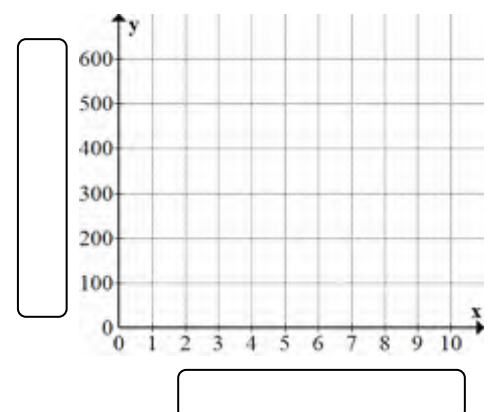
Question (6):

Find the slope of each situation.

(a)

x	–2	3	8	13
y	–2	–1	0	1

(b)

8 ft

24 ft
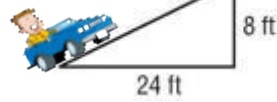
(c)

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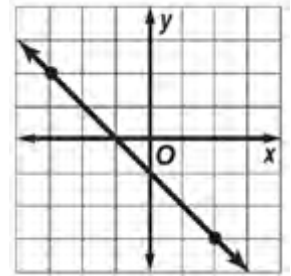
(d) $y = \dfrac{3}{5}x - 15$

(e) a line goes though the two points (3, -2) and (-4, 6)

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Question (7):

a) Solve the system of equations by graphing.

$y = 4x + 8$

$y = 2(2x + 4)$

b) Use the **slope and y-intercept** to Write the equation of the line

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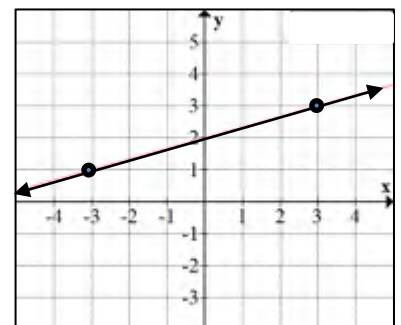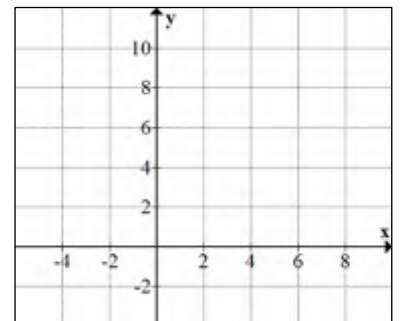
c) Solve the system of equations algebraically. Check your solution

$y = x + 5$

$y = 2x$

d) Solve the system of equations by graphing.

$y - 2x = -1$

$y = -x + 5$

14

e) Solve the system of equations algebraically. Check your solution

$x + 3y = 1$ ....

$y = 2x + 5$ ....

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f) A coloured printer prints 36 pages in 3 minutes **write and solve an equation for the direct variation** to find how many pages printed in 10 minutes?

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Question (8):

a) Al Rahba beach rent charges AED 35 rental fee for a boat plus addition charging AED 15 per hour usage. Assume The relationship is linear. Write an equation to describe this situation. Then interpret the **rate of change** and **initial value.**

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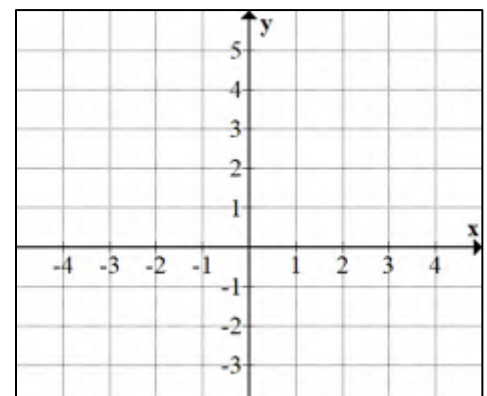**b)** complete the **function table** for the equation $f(x) = 2x + 3$.

Then graph the function. (choose suitable values for x)

x	$f(x) = 2x + 3$	y	(x, y)
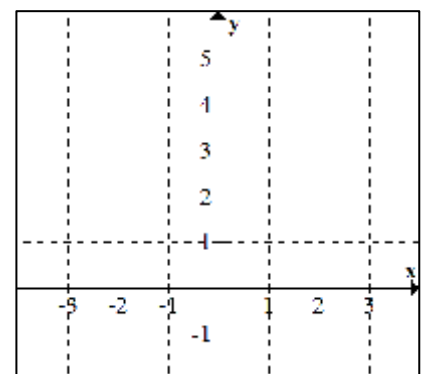
c) Write and solve equation to find the value of x . then find the Area of rectangle.

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$2x + 17$

$4x - 1$ rectangle

$6x + 9$
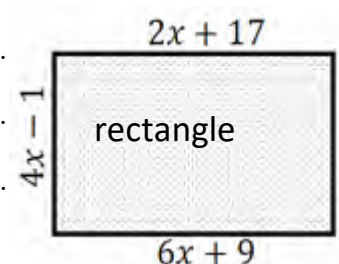
d) Estimate $\sqrt[3]{65}$ to the nearest integer.

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Question (9):

a) State the **domain** and **range** for each relation. Then determine whether each relation is **a function** or not?

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b) Write the **point-slope form equation** for a straight line goes though the two points (-2 , 3) and (4 , 7) .

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C) Complete **function-table** to graph the equation $y = x^2 + 3$

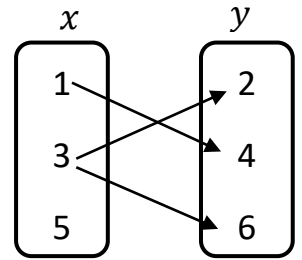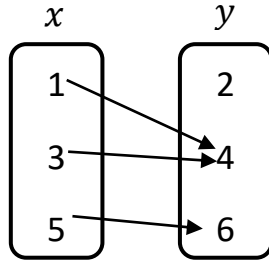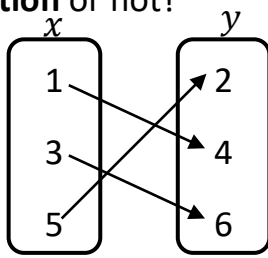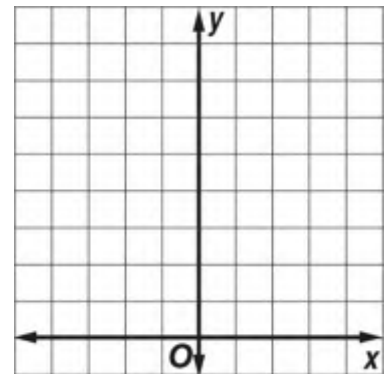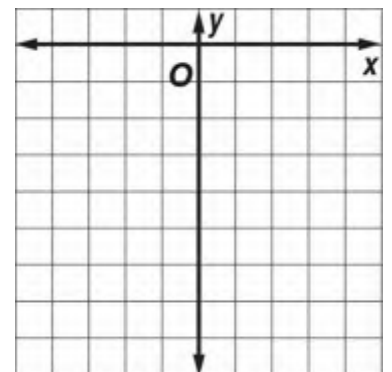| x	$x^2 + 3$	y	(x, y)

d) graph the equation $y = -2x^2 - 3$

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e) Determine **whether** the relationship between the two quantities described in each table **is linear**. If so, find the **constant rate of change**. If not, **explain** your reasoning.

a)

x	y
2	80
4	40
8	20

b)

x	y
3	10
6	15
9	20

c)

x	y
2	5
3	8
4	12

d)

x	y
1	1
2	4
3	16

16

Question (10):

1. State the **slope** and the **y-intercept** for the graph of each equation.

a) $y = \dfrac{3}{5} x - 4$ Slope = …………   y-intercept = …………..

b) $2y - x = 7$ Slope = …………   y-intercept = …………..

2. Write an equation in **point-slope form** and **slope-intercept form** for a line

each line passes through (3, -6), slope = $\dfrac{2}{3}$

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3. The quadratic equation **p = 50 + $2r^2$** models the gross profit made by a factory that produces r ovens. Graph this function. Then use your graph to estimate the profit for 5 ovens.
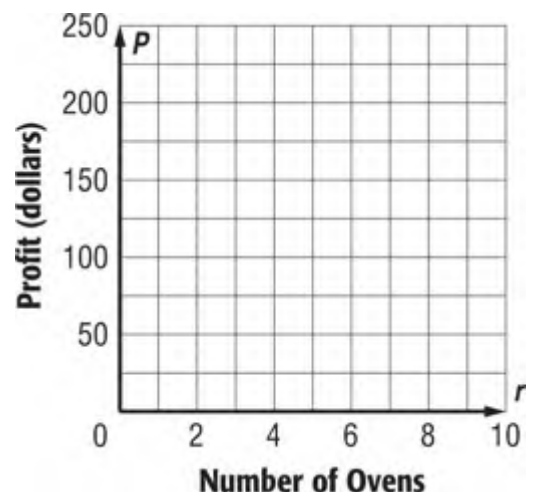
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Profit (dollars) vs Number of Ovens

4. The graph display the distance from Hasan's home as He walk in his neighborhood. Describe the change in the distance from his home over time
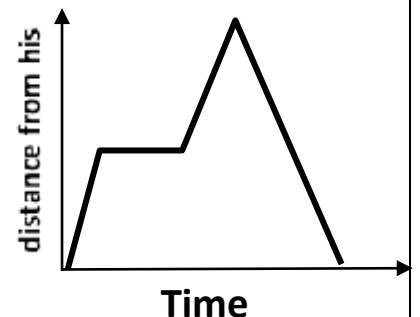
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distance from his / Time

5. the two following polygons has the same perimeter write the expression's equation to find the value of x?

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X+5, X+1, 2X+3 (triangle); X+7, X+2 (rectangle)