

**ALGEBRA – MODEL No****1****Q1** Choose the correct answer:

(1) A right circular cylinder, its base radius **3** cm , height **5** cm, then its volume = .....  $\text{cm}^2$

- a)  $15\pi$                       b)  $75\pi$                       c)  $45\pi$                       d)  $\frac{3}{5}\pi$

(2)  $\sqrt[3]{54} - \sqrt[3]{2} = \dots\dots\dots$

- a)  $3\sqrt[3]{2}$                       b)  $2\sqrt[3]{2}$                       c) 3                      d) 2

(3) If the ordered pair **(2,k)** satisfy the relation  **$Y - 2X = 1$** , then K =...

- a) 0                      b) 3                      c) 4                      d) 5

(4) The conjugate of  $\frac{1}{\sqrt{5}+2} = \dots\dots\dots$

- a)  $\sqrt{5} + 2$                       b)  $\sqrt{5} - 2$                       c)  $2 - \sqrt{5}$                       d)  $-\sqrt{5}$

(5) If the slope of straight line passes through two points ( 3 , y ) , ( 5 , - 2 ) equals **- 3** , then Y = .....

- a) 2                      b) 4                      c) 6                      d) - 30

(6) The intersection point of ascending and descending cumulative frequency curves determines the .....on the set – axis.

- a) Median                      b) Mode                      c) Mean                      d) Order of median

**Q2** Complete each of the following:

1) If the lowest boundary of a set is **8** and upper boundary is **12**, then its center is.....

2) If  $\sqrt{x} = \sqrt{2} + 1$  , then X = .....

3) The mode of the values 4 , 5 , 6 , 8 , 7 is .....

4)  $\sqrt{2}$  ,  $\sqrt{8}$  ,  $\sqrt{18}$  ,  $\sqrt{32}$  , ..... complete same pattern

5) If the median of a+2 , a+5, a+1, a+4, a+3 is **10**, then a = .....

**Q3****A)** Find in  $\mathbb{R}$  the solution set of:

①  $4 < 3x + 1 < 10$

②  $(2x - 3)^3 = 125$

**B)** If volume of sphere  $36\pi \text{ cm}^3$ . Find the surface area in term of  $\pi$ ?**Q4****A)** Represent graphically the relation:  $Y = 3 - 2X$ **B)** If  $X = \frac{\sqrt{6} + \sqrt{5}}{\sqrt{6} - \sqrt{5}}$ , prove that:  $X + \frac{1}{X} = 22$ **Q5****A) Simplify to the simplest form:**

$$5\sqrt{3} + 2\sqrt{27} - 3\sqrt{12} - 6\sqrt{\frac{1}{3}}$$

**B)** The following table represents the frequency distribution of overtime pay for **30** workers

Set	15–	25–	35–	X–	55–	65–	75–	Total
Frequency	2	K + 1	5	8	6	4	2	30

find:      ① Value of X, K      ② The arithmetic mean

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****2****Q1** Choose the correct answer:

- (1) The volume of cuboid whose dimensions  $\sqrt{2}$  ,  $\sqrt{3}$  ,  $\sqrt{6}$  = ... cm<sup>3</sup>  
a) 6                      b) 36                      c)  $6\sqrt{6}$                       d)  $18\sqrt{2}$
- (2)  $[-3, 4] \cap [2, 6] = \dots\dots\dots$   
a)  $[-3, 6]$               b)  $[-3, 2]$               c)  $[4, 6]$               d)  $[2, 4]$
- (3) If the ordered pair (5,2) satisfy the relation  $X+2Y=K$ , then K =.....  
a) 8                      b) 9                      c) 7                      d) 6
- (4) If four times number is **48**, then third this number is .....  
a) 2                      b) 4                      c) 6                      d) 8
- (5) If the slope of straight line passes through two points  $(-3, X)$  ,  $(-1, 1)$  equals **2**, then X =  
a) 2                      b) 4                      c) 6                      d) -30
- (6) If the ordered of the median is fourth value, then number of these values is .....  
a) 6                      b) 7                      c) 8                      d) 9

**Q2** Complete each of the following:

- 1) If the lowest boundary of a set is **10** and upper boundary is **30**, then its center is.....
- 2) If  $X \in [-3, 2]$  , then  $X^2 \in \dots\dots\dots$
- 3) If the mode of the values 4 , 3 ,  $X+2$  , 9 , 7 is **4** , then X = .....
- 4) If the X is even number, then the next even number to it is ....
- 5) The intersection point of ascending and descending cumulative frequency curves is ( **50 , 132** ) then the median is .....

**Q3**

**A)** Find in  $\mathbb{R}$  the solution set of the inequality then represents the solution on the number line:

$$\frac{x}{\sqrt{3} - \sqrt{5}} \leq \sqrt{3} + \sqrt{5}$$

**B)** A piece of paper has shape of rectangle **ABCD**, **BC = 44** cm, **AB = 10** cm. If it was folded to form a right circular cylinder such that  $\overline{AB}$  is coincide on  $\overline{CD}$ . **Find** the volume of resulted cylinder?  $\square$

**Q4**

**A)** **Represents** graphically the straight line which represents the relation  **$2X + 3Y = 6$** , if it cut X-axis at point **A**, cut Y-axis at point **B**. **find** the area of  $\triangle OAB$  where O is origin point

**B)** If  $\frac{x}{y} = \sqrt{3} - \sqrt{2}$ , find the value of  $\frac{x^2 + y^2}{xy}$ .

**Q5**

**A)** **Simplify to the simplest form:**

$$\sqrt[3]{24} - 3\sqrt[3]{\frac{1}{9}} + \sqrt[3]{-81} - \sqrt[3]{3}$$

**B)** Find the arithmetic mean for the following frequency distribution:

Wages	10–	20–	30–	40–	50–	Total
No. of worker	3	4	6	5	2	20

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****3****Q1** Choose the correct answer:(1) The irrational number included between **2** , **3** is .....

- a)  $\sqrt{10}$       b)  $\sqrt{7}$       c)  $\sqrt{3}$       d) 2.5

(2) The volume of sphere of diameter **1** cm is .....cm<sup>3</sup>

- a)  $\frac{1}{6} \pi$       b)  $\frac{1}{8} \pi$       c)  $\frac{4}{3} \pi$       d)  $\frac{3}{4} \pi$

(3) If ordered pair **(1,-2)** satisfies the relation **5X+bY=17**, then b =.....

- a) -6      b) -4      c) 4      d) 6

(4)  $\sqrt{\frac{1}{2}} + \sqrt{\frac{1}{2}} = \dots\dots\dots$ 

- a) 1      b)  $2\sqrt{2}$       c)  $\sqrt{\frac{1}{4}}$       d)  $\sqrt{2}$

(5) If  $n \in \mathbb{Z}^+$  ,  $n < \sqrt{11} < n + 1$  , then **n** = .....

- a) -3      b) 3      c) 4      d) 10

(6) If the arithmetic mean for five values is **12**, then the sum of these values = .....

- a) 30      b) 50      c) 60      d) 120

**Q2** Complete each of the following:

1) The slope of straight line parallel to X-axis equals .....

2)  $[-3, 2] - ]-3, 2[ = \dots\dots\dots$ 

3) The median of the values 34 , 23 , 25 , 40 , 22 , 4 is .....

4) If the mode of the values 5 , 7 , 8 ,  $X^2$  is 8, then 3 X = .....5) The sum of all real numbers in  $[-80, 80] = \dots\dots\dots$

**Q3**

**A)** If  $X = \sqrt{7} + \sqrt{5}$ ,  $XY = 2$ . Find the value of  $\frac{x+y}{xy}$

---

**B)** The volume of right circular cylinder is  $72\pi \text{ cm}^3$ , its height equals to its base radius. Find the height of the cylinder

---

**Q4**

**A)** Find the value of **m** which make the points  $(4, -3)$ ,  $(m, 7)$ ,  $(5, -4)$  are collinear.

---

**B)** Find in  $\mathbb{R}$  the solution set of the inequality then represents the solution on the number line:

$$\frac{3x+1}{6} < X+1 < \frac{3x+4}{2}$$


---

**Q5**

**A) Simplify to the simplest form:**

$$\sqrt{125} + 2\sqrt[3]{81} - \sqrt{20} + 3\sqrt[3]{-24}$$


---

**B)** Find the arithmetic mean for the following frequency distribution:

Wages	4–	8–	12–	16–	20–	Total
No. of worker	12	4	8	6	4	20

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****4****Q1** Choose the correct answer:

(1)  $\sqrt[3]{5\sqrt{5}} = \dots\dots\dots$

- a)  $\sqrt{5}$                       b)  $2\sqrt{5}$                       c)  $3\sqrt{5}$                       d)  $5\sqrt{5}$

(2)  $R - Q^{\setminus} = \dots\dots\dots$

- a) N                      b) Z                      c)  $Z^+$                       d) Q

(3) The slope of the straight line passes through (3 , 0) and (5 , -1) is

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

(4) If ( 2 , 1 ) satisfies the relation  $aX - Y = 3$  , then a =  $\dots\dots\dots$ 

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

(5) The mean of the values 3 , 4 , 5 , 6 , 7 is  $\dots\dots\dots$ 

- a) 3                      b) 5                      c) 6                      d) -5

(6) If  $1 \in ] - 3 , X [$  , then  $X = \dots\dots\dots$ 

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

**Q2** Complete each of the following:1) If  $X \in Z^-$  ,  $X^2 = 3$  , then  $(X + \sqrt{3})^2 = \dots\dots\dots$ 2) If  $-2 < X < 2$  , then  $2X + 3 \in$  the interval  $\dots\dots\dots$ 3) If  $X^2 = 5$  , then  $(X + \sqrt{5})^2 = \dots\dots\dots$  or  $\dots\dots\dots$ 4) The order of the median of frequency distribution is 40, then the total of frequency is  $\dots\dots\dots$ 5) The mode of the values: 3, 5, 7 , 5 ,6 is  $\dots\dots\dots$

## Q3

**A)** Find the value in the simplest form:

$$\sqrt{18} + 3\sqrt[3]{\frac{1}{3}} - \sqrt{8} - \sqrt[3]{9}$$


---

**B)** A right circular cylinder its height is **20** cm, find its base radius length if its volume =  $\frac{4}{9}$  the volume of a sphere its radius length 15 cm.

---

## Q4

**A)** Find in  $\mathbb{R}$  the S.S of the equation:

$$\sqrt{5} X + 1 = 6, \text{ then represent it on the number line.}$$


---

**B)** If  $X = 2 + \sqrt{3}$ ,  $Y = \frac{1}{2 + \sqrt{3}}$ . Find the Value of:  $\frac{(X+Y)^2}{2XY}$

---

## Q5

**A)** Represent graphically the relation:  $2X - Y = 3$

---

**B)** The following table shows the frequency distribution of the weekly wages of **50** workers in a factory:

Sets	5–	15–	25–	35–	45–	Sum
Frequency	7	10	12	13	8	50

~~Find~~ in pounds the **arithmetic mean** for the worker's wages?

◆◆◆

End of the questions



**ALGEBRA – MODEL No****5****Q1** Choose the correct answer:(1) If  $X \in [-2, 2]$ , then  $X^2 \in \dots\dots\dots$ 

- a)  $\{4\}$                       b)  $]0, 4[$                       c)  $[0, 4]$                       d)  $[-4, 4]$

(2) The multiplicative inverse of  $(\sqrt{3} - 2)$  is  $\dots\dots\dots$ 

- a)  $\sqrt{3} - 2$                       b)  $2 - \sqrt{3}$                       c)  $\sqrt{3} + 2$                       d)  $-\sqrt{3} - 2$

(3) The S.S of the inequality  $-2X \geq 6$  the interval  $\dots\dots\dots$ 

- a)  $[3, \infty[$                       b)  $]3, \infty[$                       c)  $] -\infty, 3[$                       d)  $] -\infty, -3]$

(4) If the upper boundary of a set is **30**, its length **10** then its center is  $\dots\dots\dots$ 

- a) 35                      b) 25                      c) 15                      d) 20

(5) The slope of the straight line passing through  $(3, 2)$ ,  $(1, 3)$  is

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

(6) The S.S of the equation  $\sqrt{2}X = 4$  in  $\mathbb{R}$  is  $\{ \dots\dots\dots \}$ 

- a)  $4\sqrt{2}$                       b)  $-2\sqrt{2}$                       c)  $2\sqrt{2}$                       d)  $\sqrt{2}$

**Q2** Complete each of the following:

1) If the lowest boundary of a set is **4** and its center is **9**, then the upper boundary is  $\dots\dots\dots$

2) The slope of straight line which is parallel to Y- axis is  $\dots\dots\dots$

3) If  $X \in \mathbb{Z}$ , number where  $X < -\sqrt[3]{10} < X + 1$ , then  $X = \dots\dots\dots$

4) If  $m(15, 30)$  is the point of intersection for the two cumulative ascending and descending curve, then the median is  $\dots\dots\dots$

5) A Cuboid its base area is  $5\sqrt{2} \text{ cm}^2$ , its height is  $3\sqrt{2} \text{ cm}$ , then its volume =  $\dots\dots\dots$

## Q3

**A)** If  $X = 2 + \sqrt{3}$  ,  $y = \frac{1}{x}$  , **find** in simplest form without using calculator the value of  $Xy - y^2$

**B)** Represent graphically the relation  $y = 2 - 2x$  , if this straight line passing through the point  $(4, 2a)$  **Find** the value of a.

## Q4

**A)** A metallic sphere with diameter **6** cm , its melted and convert to an circular cylinder its base radius is **3** cm. **Find** the height of the cylinder and its lateral area

**B)** Without using calculator, **find** in simplest form:

$$\sqrt{175} + 3\sqrt[3]{125} + \frac{35}{\sqrt{7}}$$

## Q5

**A)** If  $[a - 3, a + b]$  is solution of  $2 \leq x + 1 \leq 8$ , find the value of  $A^B$

**B)** The following table shows the frequency distribution of the marks for **50** students in math test:

Sets	10 –	20 –	30 –	40 –	50–	Sum
Frequency	8	12	2k	9	k	50

**Find:** ① Value of K      ② The arithmetic mean

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****6****Q1** Choose the correct answer:(1)  $(3, 2)$  didn't satisfy the relation .....

- a)  $X + Y = 5$       b)  $3Y - X = 3$       c)  $X + Y = 7$       d)  $Y - X = 1$

(2) The multiplicative inverse of  $\frac{\sqrt{2}}{6}$  is .....

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

(3) If  $A - B = 3\sqrt{5}$ ,  $A + B = \sqrt{5}$ , then  $A =$  .....

- a)  $4\sqrt{5}$       b)  $3\sqrt{5}$       c)  $\sqrt{5}$       d)  $2\sqrt{5}$

(4) If the slope of straight line  $aX + bY + c = 0$  is undefined then.....

- a)  $a = b$       b)  $a = 0$       c)  $b = 0$       d)  $a = -b$

(5) If the mode of the values  $4, 5, a - 2, 3$  is  $3$ , then  $a =$  .....

- a)  $2$       b)  $3$       c)  $4$       d)  $5$

(6)  $[1, 2] \cap [2, 5] =$  .....

- a)  $\emptyset$       b)  $\{2\}$       c)  $\{0\}$       d)  $\{1, 5\}$

**Q2** Complete each of the following:1) If  $X \in \mathbb{R}^+$ ,  $X > X^2$ , then  $X \in ] \dots, \dots [$ 2) If the surface area of sphere  $= 9\pi \text{ cm}^2$ , then its diameter = .....3) If  $(\sqrt{x} + \sqrt{3})(\sqrt{x} - \sqrt{3}) = 8$ , then  $x =$  .....4) If the point  $(2, a)$  satisfy the relation  $3X + y = 8$ , then  $a =$  .....5) If  $\sqrt[3]{x} = \sqrt{4}$  then  $X =$  .....

## Q3

**A)** Represent graphically the relation  $y = 4 - x$ , from the graph find the intersecting points with two axis.

**B)** Without using calculator, find in simplest form:

$$4\sqrt{8} + 12\sqrt{\frac{1}{2}} - (\sqrt{2})^3$$

## Q4

**A)** Find the solution set for the inequality  $-1 \leq 3x + 2 \leq 8$  in  $\mathbb{R}$  and represent it on the number line.

**B)** A right circular cylinder its height **20** cm, find the length of its base radius if its volume equals  $\frac{4}{9}$  volume of sphere with radius 15 cm

## Q5

**A)** If the slope of straight line which passes through the points  $(3, 3)$ ,  $(K, 5)$ ,  $(-1, m)$  equals 2, **find** the value of  $K + m$

**B)** Find the arithmetic mean for the frequency distribution:

Sets	10–	20–	30–	40–	50–	Sum
Frequency	3	4	6	5	2	20

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****7****Q1** Choose the correct answer:

(1)  $[5, 7] - \{5\} = \dots\dots\dots$

- a)  $]5, 7[$       b)  $]5, 7]$       c)  $[5, 7[$       d)  $\{6, 7\}$

(2)  $\sqrt{16} + \sqrt[3]{-64} = \dots\dots\dots$

- a) 8      b) Zero      c) -8      d)  $\pm 8$

(3) The square with side length  $\sqrt{5}$  it's Area=  $\dots\dots\dots \text{cm}^2$

- a) 5      b)  $\sqrt{5}$       c) 10      d) 25

(4) The irrational number lies between 3 , 4 is  $\dots\dots\dots$

- a) 3.5      b)  $\frac{1}{8}$       c)  $\sqrt{7}$       d)  $\sqrt{10}$

(5) The volume of a sphere =  $\frac{4}{3} \pi \text{ Cm}^3$ , its radius length =  $\dots\dots \text{cm}$

- a) 1      b) 2      c)  $\frac{4}{3}$       d)  $\frac{3}{4}$

(6) The additive inverse of the number  $(1 - \sqrt{6})$  is  $\dots\dots\dots$

- a)  $1 + \sqrt{6}$       b)  $1 - \sqrt{6}$       c)  $-1 - \sqrt{6}$       d)  $-1 + \sqrt{6}$

**Q2** Complete each of the following:

- The intersection point of the ascending and descending cumulative frequency curves determines the ...on the set – axis.
- The arithmetic mean of the values: **2 , 6 , 5 , 7 , 10** is  $\dots\dots\dots$
- $(\sqrt{6} + 1)^2 = 7 + \dots\dots\dots$
- The S.S of equation  $X^3 + 5 = \mathbf{13}$  in  $\mathbb{R}$  is  $\dots\dots\dots$
- The order of the median =  $\frac{\dots\dots\dots}{2}$

**Q3**

**A)** Find **S.S** in  $\mathbb{R}$  in the form of an interval:

$$3 < 2X + 1 \leq 11$$


---

**B)** Find in the simplest form:  $\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$

---

**Q4**

**A)** A right circular cylinder its height is **10** cm, its base radius length **7** cm. Find its volume.

---

**B)** If  $X = \sqrt{7} - \sqrt{5}$  ,  $Y = \sqrt{7} + \sqrt{5}$   
Find the Value of:  $\frac{x+y}{xy-1}$

---

**Q5**

**A)** If ( 3 , K ) satisfies the relation  $3X + 2Y = 7$ . **Find** the value of K

---

**B)** The following table shows the marks of **40** students in one month in math.

Sets	5 –	15 –	25 –	35 –	45 –	Sum
Frequency	7	10	12	13	8	50

 Find the arithmetic mean for that frequency distribution?

◆ ◆ ◆  
End of the questions

**ALGEBRA – MODEL No****8****Q1** Choose the correct answer:

(1) The remainder of subtracting  $(-3X)$  from  $3X$  equals .....

- a) Zero                      b)  $6X$                       c)  $-6X$                       d)  $-39X^2$

(2) The straight line  $Y + 2x = 4$  intersect  $X$ - axis in point .....

- a)  $(0, 2)$                       b)  $(2, 0)$                       c)  $(4, 0)$                       d)  $(0, 4)$

(3) If  $\sqrt[3]{x^2} = 4$ , then  $x =$  .....

- a) 8                              b)  $\pm 8$                               c) 4                              d)  $\pm 4$

(4) The S.S. in  $\mathbb{R}$  for the equation  $X^2 - 4 = 0$  is.....

- a)  $\{2\}$                               b)  $\{-2\}$                               c)  $\{2, -2\}$                               d)  $\emptyset$

(5) Number of edges of two adjacent faces of a cube equal.....

- a) 6                              b) 7                              c) 8                              d) 12

(6)  $\sqrt{5} + \sqrt{5} + \sqrt{5} =$  .....

- a)  $5\sqrt{5}$                               b)  $\sqrt{15}$                               c)  $\sqrt{45}$                               d) 15

**Q2** Complete each of the following:

1) The mean for the values  $a + 1$ ,  $a$ ,  $a - 1$  is 6, then  $a =$  .....

2) If  $X < -\sqrt[3]{35} < X + 1$ ,  $x$  is an integer number, then  $x =$  .....

3) If  $(-b, b)$  satisfy the relation  $y + 3x = 8$ , then  $b =$  .....

4) The volume of cube =  $125 \text{ cm}^3$ , then its total area = ..... $\text{cm}^2$

5) The additive inverse of  $\sqrt{5} - 2$  in simplest form is.....

**Q3**

**A)** Find the value of X :

$$X \sqrt[3]{2} = 2 \sqrt[3]{54} + 3 \sqrt[3]{-128} + 6 \sqrt[3]{16} - 6 \sqrt[3]{\frac{1}{4}}$$


---

**B)** If  $X = \sqrt[3]{3} + 1$ ,  $Y = \sqrt[3]{3} - 1$ . **Find** the value of  $(x + y)^3$

---

**Q4**

**A)** Represent graphically the relation  $y = 6 - x$ , if the straight line passing through the point  $(k, 2k)$  **find** the value of k ?

---

**B)** If  $X = [-1, 4]$ ,  $y = [3, \infty[$ , by using the number line **find** each of the following :

①  $X \cup y$

②  $X \cap y$

③  $X - y$

---

**Q5**

**A)** **Find** the solution set for the inequality in  $\mathbb{R}$  and represent it on the number line:

$$-5 \leq -2 + 3X \leq 1.$$


---

**B)** A right circular cylinder its volume is  $40\pi \text{ cm}^3$ , its height is 10 cm, **Find** its lateral area in the form by  $\pi$ .

◆ ◆ ◆  
End of the questions



**ALGEBRA – MODEL No****9****Q1** Choose the correct answer:

(1)  $(1 - \sqrt{5})^2 + \frac{1}{\sqrt{5}} = \dots\dots$

- a) 2                      b) 5                      c) -4                      d) 6

(2) If the lowest boundary of a set is **6** and upper boundary is **10**, then its center is.....

- a) 4                      b) 6                      c) 8                      d) 16

(3) The solution set of the equation  $X^2 + 9 = 0$  in  $\mathbb{R}$  is .....

- a)  $\{-3\}$                       b)  $\{3, -3\}$                       c)  $\{-9\}$                       d)  $\emptyset$

(4) If the median for the values:  $X + 1$ ,  $X - 3$ ,  $X + 5$  is **7**, then  $X = \dots$

- a) 2                      b) 6                      c) 7                      d) 10

(5)  $[-2, 2] \cap \mathbb{Z}^+ = \dots\dots\dots \square$

- a)  $\{1, 2\}$                       b)  $[1, 2]$                       c)  $\{0, 1, 2\}$                       d)  $[-2, 1]$

(6)  $\sqrt{16 + 9} = 4 + \dots\dots$

- a) 1                      b) 3                      c) 4                      d) 5

**Q2** Complete each of the following:

- 1) Slope of straight line passing through **A(5,4)**, **B(-1,1)** equals.....
- 2) If volume of cube is  $3\sqrt{3} \text{ cm}^3$ , then sum of its edges = ..... cm
- 3) The arithmetic mean for the values: **6, 4, 3, 7** is .....
- 4) The mode for the values: **5, 1, 9, 4, 1** is .....
- 5) If **(1, K)** satisfies the relation:  $2X + 3Y = 1$ , then **K = ....**

**Q3**

**A)** Find in  $\mathbb{R}$  the **S.S** of the inequality and represents the solution on the number line:

$$1 \leq 3 - 2X \leq 5$$

**B)** If the volume of right circular cylinder is  $360\pi$ , and its height **10** cm. find the length of its base radius and calculate its lateral area in term of  $\pi$ .

**Q4**

**A)** If  $X = \sqrt{13} + \sqrt{6}$ ,  $XY = 1$

Find the value of the expression:  $X^2 - 49Y^2$

**B)** Simplify to the simplest form:

$$\sqrt{175} - \sqrt[3]{16} + \frac{35}{\sqrt{7}} + 2\sqrt[3]{8}$$

**Q5**

**A)** If the slope of the straight line passing through **D ( 4 , 3 )**, **E ( 5 , n )** equals **3**. Find the value of **n**?

**B)** The following table shows the marks of **15** students in one month in math.

Sets	1 –	3 –	5 –	7 –	9 –	Sum
Frequency	2	3	X	4	1	15

 Find: ① The arithmetic mean

② Find value of X

◆◆◆  
End of the questions

**ALGEBRA – MODEL No****10****Q1** Choose the correct answer:**(1)** If the edge length of cube is **10** cm, then its total area .....  $\text{cm}^2$ 

- a) 100                      b) 400                      c) 600                      d) 1000

**(2)** The median for the values: **1 , 9 , 6 , 8** is .....

- a) 6                      b) 7                      c) 8                      d) 9

**(3)** The additive inverse of  $\frac{10}{\sqrt{2}}$  in the simplest form is .....

- a)  $5\sqrt{2}$                       b)  $-5\sqrt{2}$                       c)  $\frac{\sqrt{2}}{10}$                       d)  $\frac{\sqrt{2}}{5}$

**(4)** If the lowest boundary of a set is **3** and its center is 6, then its upper boundary is.....

- a) Zero                      b) 6                      c) 9                      d) 12

**(5)**  $\{8, 9, 10\} - ]8, 10[ = \dots\dots\dots$ 

- a)  $\{8, 10\}$                       b)  $\emptyset$                       c)  $\{9\}$                       d) N

**(6)** If the arithmetic mean for the values: 3 , m , 4 is **5**, then m = .....

- a) 2                      b) 7                      c) 8                      d) 15

**Q2** Complete each of the following:

**1)**  $\sqrt{9} + \sqrt{16} = \sqrt{\dots\dots\dots}$

**2)** The slope of straight line is perpendicular to Y-axis equals.....

**3)** If the median order of a grouped frequency distribution is 10, then the sum of the frequencies is .....

**4)** If the mode for the values:  $X - 3$  ,  $X$  ,  $X - 3$  is 3, then  $X = \dots\dots\dots$

**5)** If the ordered pair ( -2 , 5 ) satisfies the relation  $X + K Y = 3$ , then  $K = \dots\dots\dots$

**Q3**

**A)** Find in  $\mathbb{R}$  the **S.S** of the inequality and represents the solution on the number line:

$$\frac{x+1}{\sqrt{3}-\sqrt{5}} \leq \sqrt{3} + \sqrt{5}$$

**B)** Find the radius length of sphere whose volume  $288 \pi \text{ cm}^3$ , then find its surface area in term of  $\pi$ .

**Q4**

**A)** If  $X = \sqrt{5} - 2$ ,  $XY = 1$

① Prove that:  $X, Y$  are two conjugate numbers

② The value of:  $X^2 + Y^2$

**B) Simplify to its simplest form:**

$$\sqrt{50} + \frac{4}{\sqrt{2}} - 10\sqrt{\frac{1}{2}} + 2\sqrt{18}$$

**Q5**

**A)** If the slope of the straight line passing through  $(3X, 5)$ ,  $(2, 4X)$  equals **5**. Find the value of  $X$

**B)** The following table shows the frequency distribution of the marks for **40** students in math test:

Sets	4 –	8 –	12 –	16 –	20 –	Sum
Frequency	5	9	X	8	6	40

**Find:** ① Value of  $X$       ② The arithmetic mean

◆◆◆  
End of the questions

# Algebra Examinations of Governorates 2012

Cairo

1

Mathematics department - Ahmed Lotfy (E.LS)

## 1 Complete each of the following:

- The solution set of the inequality  $-x > 3$  in  $\mathbb{R}$  is .....
- $\sqrt[3]{125} - \sqrt[3]{24} = \dots\dots\dots$
- The slope of the straight line parallel to  $x$  - axis is .....
- The additive inverse for  $(1 - \sqrt{2})$  is .....
- $\sqrt[3]{-64} + \sqrt{16} = \dots\dots\dots$

## 2 Choose the correct answer:

- If  $x = 2 + \sqrt{5}$ ,  $y$  is the conjugate number for  $x$  then  $(x - y)^2 = \dots\dots\dots$  . ( $2\sqrt{8}$  or 20 or  $4\sqrt{5}$  or 10).
- $(\sqrt{8} + \sqrt{2})^2 = \dots\dots\dots$  ( $\sqrt{10}$  or 10 or 18 or  $\sqrt{18}$  ).
- $2 \in \dots\dots\dots$  ( $|2, 5|$  or  $|2, 5|$  or  $\{1, 5\}$  or  $|1, 5|$  ).
- The radius length of a right circular cylinder whose volume is  $40\pi \text{ cm}^3$  and height 10 cm = ..... cm. ( $5.3, 2, 1$ )
- The irrational number lies between 2 and 3 is ..... . ( $\sqrt{10}$  or  $\sqrt{7}$  or 2.5 or  $\sqrt{3}$  )

## 3 (a) Find the solution set of the inequality: $1 \leq 2x + 3 < 5$ in $\mathbb{R}$ and represent it on the number line.

(b) Put in the simplest form:  $\frac{1}{4}\sqrt{80} - \sqrt{20} - \sqrt{25} + \sqrt{125}$

## 4 (a) Find the slope of the straight line that passes by the ordered pairs $(0, -3)$ , $(2, 1)$

(b) Find the total area of a cuboid whose volume is 750 cm and its height 5 cm. with a squared shape base.

## 5 The following table represent the daily wages by L.E for 30 workers. Find the arithmetic mean of that distribution:

Set.	4 -	8 -	12 -	16 -	Total
Frequency	3	5	14	8	30

Cairo

2

El Khalifa & Mokattam Educational Zone  
Futures Languages Schools

Answer the following questions:

## 1 Choose the correct answer:

1.  $Q \cup Q^c = \dots\dots\dots$  a)  $\emptyset$  b)  $\mathbb{R}$  c)  $Q$  d)  $\{O\}$

2)  $\sqrt[3]{64} + \sqrt{16} = \dots\dots$

- a) zero                      b) 8                      c) -8                      d)  $\pm 8$

3)  $[-2, 5] \cup ]4, 6[ = \dots\dots\dots$

- a)  $[-2, 6]$                       b)  $] -2, 6[$                       c)  $[-2, 6[$                       d)  $] -2, 6[$

4. If  $(a, 2a)$  satisfied the equation:  $2x + 3y = 24$ , then  $a = \dots\dots$

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

5. The mean of the values 4, 7, 12, 13, 8, 10 is  $\dots\dots$

- a) 6                      b) 8                      c) 9                      d) 12

**2 Complete each of the following:**

1.  $[4, 7] \sim \{4, 7\} = \dots\dots\dots$

2. 4 cm, 7 cm and 5 cm are dimensions of cuboid, then its volume =  $\dots\dots\dots$

3. The S.S of the equation:  $x^3 + 9 = 1$  in  $R$  is  $\dots\dots\dots$

4. If the lower limit of a set is 10 and the upper limit of the same set is 20, then its center =  $\dots\dots\dots$

5. If the ordered pair  $(-1, 1)$  satisfies the relation  $-x + by = 16$ , then  $b = \dots\dots\dots$

**3 (a)** If  $x = 2\sqrt{2} - \sqrt{3}$   $y = \frac{5}{2\sqrt{2} - \sqrt{3}}$ , find the value of the expression:  $(x+y)^2$

(b) Find in  $R$  the S.S of:  $8x - 17 \geq 6x + 11$

**4 (a) By using the number line:** If  $x = [-7, 3]$ ,  $y = [-3, \infty[$

Then Find: 1)  $x \cap y$     2)  $x - y$

(b) Find the slope of the straight line  $\overleftrightarrow{AB}$  where  $A(-1, 3)$ ,  $B(2, 5)$ . Is the point  $(8, 1) \in \overleftrightarrow{AB}$ ?

**5 (a)** The following table shows the frequency distribution of marks of 40 students in math:

Sets	5 -	15-	25-	35-	45-	Total
Frequency	7	9	12	8	4	40

Find the mean of this distribution.

b) Find the length of the radius, of the right circular cylinder if its volume  $64\pi \text{ cm}^3$  and its height 4 cm. Represent these data by broken line.

Cairo

3

Abdeen Educational Zone - Mohamed Fared E.L.S

Answer the following questions:

**2 Complete each of the following:**

a) The conjugate number of the number  $\sqrt{7} - 2 = \dots\dots\dots$

b) The median of a set 3, 7, 9, 5 and 4 is  $\dots\dots\dots$

c) The S.S of the inequality:  $-x > 3$  in  $R$  is  $\dots\dots\dots$  as interval.

d)  $[3, 7] - \{3, 7\} = \dots\dots\dots$

e) If the straight line represents  $x - y = 2$  cuts  $x$  - axis ,then  $x = \dots\dots\dots$

**2 Choose the correct answer:**

1) The multiplicative inverse of  $\frac{\sqrt{3}}{6}$  is  $\dots\dots\dots$

- (a)  $\sqrt{3}$                       b)  $2\sqrt{3}$                       c)  $3\sqrt{3}$                       d)  $3\sqrt{6}$

2)  $\sqrt{3} \dots\dots\dots [1, 2]$

- (a)  $\in$                       b)  $\notin$                       c)  $\subset$                       d)  $\not\subset$

3) The S.S of the equation :  $x^2 + 25 = 0$  in  $R$  is  $\dots\dots\dots$

- (a) 5                      b)  $\pm 5$                       c)  $\phi$                       d) -5

4)  $\sqrt{2} + \sqrt{8} = \dots\dots\dots$

- (a)  $\sqrt{10}$                       b) 4                      c)  $4\sqrt{2}$                       d)  $3\sqrt{2}$

5. The mode of values 2, 5, 8, 2, 3 is  $\dots\dots\dots$

- (a) 4                      b) 2                      c) 3                      d) 8

**3 a) Simplify to the simplest form:  $\sqrt[3]{16} - \sqrt[3]{54} - \sqrt[3]{128}$**

(b) Find the value of  $k$  where  $(k, 2k)$  satisfies the , relation  $x + y = 15$

**4 a) Find the S.S in  $R$  of the following inequality:**

$-1 \leq 2x + 3 < 5$ , then represent the S.S. on the number line.

(b) Find the lateral area for a right cylinder of volume

$924 \text{ cm}^3$ . and of a height 6 cm ( $\pi = \frac{22}{7}$ )

**5 In the following table find the mean of marks of 50 students in an examination:**

Sets	2–	6–	10–	14–	18–	22–	26–	Total
Frequency	3	6	8	10	11	8	4	50

**Cairo**

**4**

**El-Zeitoun Directorate - Language School**

**1 Answer the following questions:**

1. The volume of the sphere =  $\dots\dots\dots$

2.  $\sqrt{64} - \sqrt[3]{64} = \dots\dots\dots$

3. The S.S in  $R$  for the equation:  $x^2 + 4 = 0$  is  $\dots\dots\dots$

4.  $] -2, 1 [ \cap [ -2, 1 ] = \dots\dots\dots$

5.  $(\sqrt{3} - \sqrt{2})^2 + 2\sqrt{6} = \dots\dots\dots$

**2 Choose the correct answer from the given ones:**

1. The multiplicative inverse of  $\sqrt{\frac{3}{6}}$  is  $\dots\dots\dots$

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

- 2) If the ordered pair  $(-1, 3)$  satisfies the relation  $3x - y = C$ , then  $C = \dots\dots$   
 a) 7                      b) -7                      c) 6                      d) -6
- 3) The S.S. in R for the equation  $x^3 = -8$  is  $\{\dots\dots\}$   
 a) 2                      b) 4                      c) -2                      d) -4
4. The cube whose volume is  $8 \text{ cm}^3$ , the area of one of its faces =  $\dots\dots \text{ cm}^2$   
 a) 4                      b) 8                      c) 16                      d) 64
5. If The mode of the values: 4, a, 5, 3 is 3, then  $a = \dots\dots$   
 a) 4                      b) 3                      c) 5                      d) 6

**3** (a) Find the value of k such that  $\overleftrightarrow{AB}$  is parallel to y-axis where

$A(6, 2)$   $B(-2k, 4)$

(b) If  $A = ]-\infty, 3[$ ,  $B = [-1, 5]$

Find the following using the number line. (1)  $A \cap B$       (2)  $A \cup B$

**4** (a) **Simplify to the simplest form:**

$$\sqrt{50} - \sqrt{18} - \sqrt{2}$$

(b)  $-7 \leq 4x - 3 < 5$ , then represent it on the number line.

**5** The following is the frequency distribution of the weekly extra wages of 100 workers in a factory:

Extra wages	30-	40-	50-	60-	70-	80-	Total
No. of workers	10	K	20	28	20	8	100

(1) Find the value of k.

(2) Find the mean of this distribution.

**Cairo**

**5**

**Rod El-Farag directory - Fatma El -Zahraa  
Experimental language School**

**Answer the following questions:**

**1** **Choose the correct answer from between brackets:**

- $\sqrt{12} - \sqrt{3} = \dots\dots\dots$  ( $3$  or  $\sqrt{3}$  or  $2\sqrt{3}$  or  $3\sqrt{3}$ )
- $[-2, 3] - \{-2, 3\} = \dots\dots\dots$  ( $[-2, 3[$  or  $]-2, 3]$  or  $[-1, 2]$  or  $]-2, 3[$ )
- The ordered pair  $(3, 1)$  satisfies the relation  $\dots\dots\dots$   
 $(x - y = 6, 3x + y = 6, x - 3y = 6, x + 3y = 6)$
- The volume of the sphere whose diameter length is  $6 \text{ cm} = \dots\dots\dots \text{ cm}^3$   
 $(9\pi$  or  $2\pi$  or  $36\pi$  or  $288\pi)$
- The multiplicative inverse of the number  $\frac{\sqrt{3}}{2}$  is  $\dots\dots\dots$   
 $(\frac{3}{2}\sqrt{2}$  or  $\frac{3}{2}\sqrt{2}$  or  $\sqrt{\frac{6}{3}}$  or  $-\sqrt{\frac{3}{2}})$



## 2 Complete the following:

1. If  $\sqrt[3]{x} = 3$ , then  $x = \dots\dots\dots$
2. The S.S of the inequality  $-3x + 2 \geq 11$  is  $\dots\dots\dots$
3. The cube hose lateral area is  $36 \text{ m}^2$ , its volume =  $\dots\dots\dots$
4. If  $x < \sqrt{15} < x + 1$ ,  $x \in \mathbb{Z}$ , then  $x = \dots\dots\dots$
5. If  $(k, 2k)$  satisfied the equation  $2x + 3y = 24$ , then  $k = \dots\dots$

## 3 (a) If the straight line that represents the relation $y - x = a$ cuts $y - \text{axis}$ at $(k, 3)$ .

Find the value of  $a$ .

(b) Find the S.S of  $(2x - 1)^3 - 10 = 54$

## 4 (a) If $x = 2\sqrt{2} - \sqrt{3}$ and $y = \frac{5}{2\sqrt{2} - \sqrt{3}}$ , then calculate $\frac{x+y}{x y}$

(b) Simplify:  $\sqrt[3]{54} - 2\sqrt[3]{\frac{1}{4}} - \sqrt[3]{16}$

## 5 From the following frequency table.

Sets	10-	20-	30-	40-	X-	60-	Total
Frequency	12	15	25	27	$K + 4$	4	100

Find 1) the values of both  $X$  and  $K$ .

2) The arithmetic mean of this distribution.

**Cairo**

**6**

**El Nozha Educational Zone, El Sayeda Khadiga  
Language School**

## 1 Complete:

- 1) The multiplicative inverse of the number  $\frac{\sqrt{2}}{12}$  is =  $\dots\dots\dots$
2.  $[0, 2] \cup [1, 5[ = \dots\dots\dots$
3. If  $x = \sqrt{3} + \sqrt{2}$ , then  $x^{-1} = \dots\dots\dots$
4. The arithmetic means of 3, 2, 7, 9, 9 is  $\dots\dots\dots$
5. The mode of 8, 2, 1, 8, 1, 8 is =  $\dots\dots\dots$

## 2 Choose the correct answer:

1. If the volume of a sphere is  $\frac{32}{3} \pi \text{ cm}^3$ , then its radius length =  $\dots\dots\dots$  cm  
 $\{1, 2, 4, 16\}$
2.  $\sqrt[3]{2} + \sqrt[3]{2} = \dots\dots\dots$   $\{\sqrt[3]{3}, \sqrt[3]{4}, \sqrt[3]{8}, \sqrt[3]{16}\}$
3. If  $A, B$  and  $C$  are collinear, then the slope of  $\overleftrightarrow{BC} = \dots\dots\dots$
4. The median of 9, 6, 8, 7, 2 is  $\dots\dots\dots$   $\{6, 7, 8, 9\}$
5. The irrational number between 2, 3 is  $\dots\dots\dots$   $\{\sqrt{10}, \sqrt{7}, \sqrt{15}, \sqrt{3}\}$

3 a) Put in the simplest form:  $\sqrt{48} - 2\sqrt{27} - 6\sqrt{\frac{1}{3}}$

b) Find the lateral area of a right circular cylinder whose diameter length is 4 cm and its height = 10 cm

4 a) Find the S.S of equations:

(i)  $2 - \sqrt{6} x = 8$  (ii)  $(x + 2)^3 = -8$

(b) Find the S.S of inequality:  $1 \leq 1 - 2x < |-7|$

5 a) Find the slope of the straight line  $\overleftrightarrow{AB}$  where A(5, 0) , (0, 2).

(b) The following table shows the frequency of marks of 50 student:

Sets	2-	6-	10-	14-	18-	22-	26-	Total
Freq.	3	6	8	10	11	8	4	50

Find the Arithmetic mean of the marks of the students.

Cairo

7

Rod El Farag Educational Directorate  
Ahd Gedid Language School

1 Choose the correct answer:

1.  $\sqrt{12} - \sqrt{3} = \dots\dots\dots$

- (a) 3 (b)  $\sqrt{3}$  (c)  $2\sqrt{3}$  (d)  $3\sqrt{3}$

2.  $] -1, 2 [ - [ 1, 4 ] = \dots\dots\dots$

- (a)  $] -1, 1 [$  (b)  $\{-1, 1\}$  (c)  $] -1, 1 ]$  (d)  $[ -1, 1 ]$

3. The multiplicative inverse of  $\frac{\sqrt{3}}{6}$  is  $\dots\dots\dots$

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

4. The median of a set of the values 3, 7, 2, 9, 5 is  $\dots\dots\dots$

- (a) 6 (b) 5 (c) 7 (d) 3

5. The mean of 5, 6, 2, 7 is  $\dots\dots\dots$

- (a) 4 (b) 5 (c) 7 (d) 6

2 Complete:

a) The ordered pairs that satisfy the relation  $2x - 3y = 6$  are (0,  $\dots\dots\dots$ ) , ( $\dots\dots\dots$ , 0)

b)  $[ 3, 5 ] - \{ 3, 5 \} = \dots\dots\dots$

c) The S.S of  $x^2 + 4 = 0$  is  $\dots\dots\dots$

d)  $\sqrt[3]{64} - \sqrt{16} = \dots\dots\dots$

e) The conjugate of  $2 - \sqrt{5}$  is  $\dots\dots\dots$

3 (a) Simplify :  $\sqrt{32} - \sqrt{72} - 6\sqrt{\frac{1}{2}}$

(b) Find the volume of cylinder with base raduis 7 cm and its height 10 cm  $\pi = \frac{22}{7}$

4 a) If  $x = \sqrt{5} + 2$ ,  $Y = \sqrt{5} - 2$ . Find the value of  $(x + y)^2$

b) Represent the following relation graphically  $x - y = 1$

5 a) Find the S.S of inequality of  $-1 < x + 3 \leq 5$  interval

b) Find the mean of the following date.

Sets	10-	20-	30-	40-	50-	Total
Frequency	10	20	25	30	15	100

**Cairo**

**8**

**El-Zeitoun Directorate - Language School**

1 Answer the following questions:

1. The slope of the straight line is undefined when it is parallel to .....

2.  $\sqrt{64} - \sqrt[3]{64} = \dots\dots\dots$

3. The S.S in R for the equation:  $x^2 + 4 = 0$  is .....

4.  $] -2, 1 [ \cap [ -2, 1 ] = \dots\dots\dots$

5.  $(\sqrt{3} - \sqrt{2})^2 + 2\sqrt{6} \dots\dots\dots$

2 Choose the correct answer from the given ones:

1. The multiplicative inverse of  $\sqrt{\frac{3}{6}}$  is .....

(a)  $\sqrt{3}$                       b)  $2\sqrt{3}$                       c)  $3\sqrt{3}$                       d)  $3\sqrt{6}$

2. The S.S in R of the inequality  $-x < 0$  is .....

(a)  $] -\infty, 0 ]$                       b)  $] -\infty, 0 [$                       c)  $] 0, \infty [$                       d)  $[ 0, \infty [$

3. The S.S in R for the equation  $x^3 = -8$  is { .....

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

4. The cube whose volume is  $8 \text{ cm}^3$ , the area of one of it's faces = .....  $\text{cm}^2$

(a) 4                      b) 8                      c) 16                      d) 64

5. If the mode of the values: 4, a, 5, 3, is 3, then a = .....

(a) 4                      b) 3                      c) 5                      d) 6

3 (a) If  $x = \sqrt{5} + \sqrt{3}$ ,  $y = \frac{2}{\sqrt{5} + \sqrt{3}}$ . Find the value of the expression:  $(x - y)^2$

(b) If  $A = ] -\infty, 3 [$ ,  $B = [ -1, 5 ]$ . Find the following using the number line

(1)  $A \cap B$                       (2)  $A \cup B$

- 4 (a) Find three ordered pairs satisfy the relation  $6x = 1 - y$   
 (b)  $-7 \leq 4x - 3 < 5$ , then represent it on the number line.
- 5 The following is the frequency distribution of the weekly extra wages of 100 workers in a factory:

Extra wages	30-	40-	50-	60-	70-	80-	Total
No. of workers	10	k	20	28	20	8	100

- 1) Find the value of k.  
 2) Find the mean of this distribution.

**Cairo**

**9**

## Al Salam Education Zone - Anwer Al Sadat Exp. Lang. School

**Answer the following questions:**

**1 Choose the correct answer:**

- If  $\frac{3}{a+2}$  is a rational number, then  $a \neq \dots\dots\dots$  ( 3 , 5 , -2, zero)
- The mean of the values 7, 15, 19, 14 and 15 is  $\dots\dots\dots$  ( 14 , 15, 16, 17)
- The slope of the constant straight line is  $\dots\dots\dots$
- The multiplicative inverse of  $\sqrt{\frac{3}{6}}$  is  $\dots\dots\dots$  (  $-\sqrt{\frac{3}{6}}$  ,  $6\sqrt{3}$  ,  $2\sqrt{3}$  ,  $-2\sqrt{3}$  )
- The mode of the values 3 , 5, 3 , 6, 3 and 8 is =  $\dots\dots\dots$  ( 3 , 5 ,6, 8)

**2 Complete:**

- The solution set of the equation:  $x^2 + 4 = 0$  in R is  $\dots\dots\dots$
- The multiplicative neutral in R is  $\dots\dots\dots$
- $[-1, 5] - ]-1, 5[ = \dots\dots\dots$
- $\sqrt[3]{-8} = \dots\dots\dots$
- If  $x < \sqrt{15} < x + 1$ ,  $x \in \mathbb{Z}$ , then  $x = \dots\dots\dots$

**3 a) Find the solution set of the inequality:**

$x - 3 \geq 4$  in R and represent it on the number line.

b) Simplify:  $\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$

**4 a) Find the volume of cylinder with base radius length 7 cm. and its height 10 cm.**  
 ( $\pi = \frac{22}{7}$ )

b) If the straight line  $\overleftrightarrow{AB} \parallel x\text{-axis}$  where

A ( 1, 8) , B (-7, 4 K). Find k.

- 5 a) Find the mean of the following data:

Sets	8-	12-	16-	20-	24-	Total
Frequency	4	10	16	12	8	50

b) Simplify :  $(\sqrt{5} - \sqrt{2})^2 + \sqrt{40}$

**Giza**

**10**

**Omrانيا Zone - El-Sadat E.L.S**

**Answer the following questions:**

- 1 Choose the correct answer:

- 1) If the volume of cube is  $64 \text{ cm}^3$ , then a lateral of = .....  $\text{cm}^2$ . (4, 8, 64, 96)
- 2)  $\sqrt[3]{54} + \sqrt[3]{-2} = \dots\dots\dots$  ( $\sqrt[3]{52}$ ,  $\sqrt[3]{2}$ ,  $2\sqrt[3]{2}$ ,  $4\sqrt[3]{2}$ )
- 3) The relation  $y = 3$  is represented by a straight line cutting the y- axis at .....  
( (3, 0), (-3, 0), (0, 3), (0, -3) )
- 4) If the mode of 7,  $x + 2$ , 5 is 7, then  $x = \dots\dots\dots$  (7, 5, 2, 12)
- 5)  $3 \in \dots\dots\dots$  ( $]3, 5[$ ,  $]0, 3[$ ,  $\{1, 5\}$ ,  $]1, 5[$ )

- 2 Complete each of the following:

- 1)  $] -3, 2[ \cap \mathbb{R}^- = \dots\dots\dots$
- 2) If  $\sqrt[3]{x} = \sqrt{9}$ , then  $x = \dots\dots\dots$
- 3) The S.S of the  $-X > 3$  in  $\mathbb{R}$  is .....
- 4) The median of 3, 7, 2, 5 and 4 is .....
- 5) The volume of the sphere whos radius length  $\sqrt[3]{21}$  is .....

- 3 (a) If  $x = 2\sqrt{2} - \sqrt{3}$   $y = \frac{5}{2\sqrt{2} - \sqrt{3}}$ . Find the value of  $(x + y)^2$

(b) Find in S.S of the inequality and represent on number line  $7x - 12 \geq 5x - 8$ .

- 4 (a) Simplify  $= 2\sqrt{18} + \sqrt{50} - \frac{1}{3}\sqrt{162}$

(b) If  $A = ] -1, 3 ]$  and  $B = [ 0, 5 [$ .

Find each the following using the number line:  $A \cap B$   $A - B$ .

- 5 (a) Find the slope of the straight line  $\overleftrightarrow{AB}$  where

$A(-6, 7)$  ,  $B(0, 2)$

- (b) The following table shows the frequency distribution of marks of 100 students in math:

Sets	10-	20-	30-	40-	50-	Total
Frequency	10	20	25	30	15	100

Find the mean of frequency table.

**Giza**

**11**

## Omrania Educational Directorate El-Neel Language School

### 1 Complete:

- (a) The solution set of inequality  $-3 \leq -x < 3$  in  $\mathbb{R}$  is .....
- (b)  $[-1, 3] - \{3\} = \dots\dots\dots$
- (c) The sphere whose volume is  $36\pi \text{ cm}^3$  its radius length = ..... cm
- (d) If the lower limit of a set is 6 and the upper limit of the same set is 10, then its centre = .....
- (e) The conjugate number of the number  $\frac{2}{\sqrt{5} - \sqrt{3}}$  is .....

### 2 Choose:

- a)  $\sqrt[3]{54} + \sqrt[3]{2} = \dots\dots\dots$  ( $3\sqrt[3]{2}, 2\sqrt[3]{2}, 3, 2$ )
- b)  $2, 5 [ \cup ] \cup \{2, 5\} = \dots\dots\dots$  ( $\phi, \{2, 5\}, [2, 5], (2, 5)$ )
- c) The real numbers  $\mathbb{R} = \dots\dots\dots$  ( $\mathbb{R}_+ \cup \mathbb{R}, \mathbb{Q} \cap \mathbb{Q}', ]-\infty, \infty[ \cup \{0\}$ )
- d)  $(\sqrt{2} + \sqrt{3})^2 - 2\sqrt{6} = \dots\dots\dots$  ( $\mathbb{R}_+ \cup \mathbb{R}, \mathbb{Q} \cap \mathbb{Q}', ]-\infty, \infty[ \cup \{0\}$ )
- e) The slope of the straight line  $y = 1$  is .....  
( $-1, 0, 1$ , undefined)

- 3 a) If  $x = \sqrt{3} + \sqrt{2}$ , and  $y = \frac{1}{\sqrt{3} + \sqrt{2}}$ , find the value of  $x^2 + 2xy + y^2$

b) Simplify:  $\sqrt[3]{16} - \sqrt[3]{54} - \sqrt[3]{128} + \sqrt[3]{\frac{1}{4}}$

- 4 (a) Find in  $\mathbb{R}$ , the S.S. of the inequality  $4x - 3 \geq -7$ ,  
then represent it on the number line.

(b) Find the slope of the straight line  $\overleftrightarrow{CD}$  where  $C(0, -3)$ ,  $D(2, 5)$

- 5 (a) The following is the frequency distribution of the weekly extra wages of 100 workers in a factory.

Extra wages	30-	40-	50-	60-	70-	80-	Total
No. of workers	10	14	20	28	20	8	100

Find the mean of this distribution.

**1 Complete:**

- $[-2, 6] \cap [2, 7] = \dots\dots\dots$
- The additive inverse of  $2 + \sqrt{3}$  is  $\dots\dots\dots$
- If  $x < \sqrt{15} < x + 1$ ,  $x \in \mathbb{Z}$ , then  $x = \dots\dots\dots$
- The mean of the value 1, 4, 5, 10 is  $\dots\dots\dots$
- The slope of the straight line  $x = 2$  is  $\dots\dots\dots$

**2 Choose the correct answer:**

- A sphere of radius 1 cm, then its volume is  $\dots\dots\dots \text{cm}^3$ .  
 a)  $\frac{\pi}{2}$                       b)  $\frac{\pi}{6}$                       c)  $\frac{4\pi}{3}$                       d)  $\frac{3\pi}{4}$
- The value of the number  $\frac{2}{\sqrt{7} - \sqrt{5}}$  is  $\dots\dots\dots$   
 a)  $\sqrt{7} - \sqrt{5}$                       b)  $\sqrt{7} + \sqrt{5}$                       c)  $2\sqrt{7}$                       d)  $\sqrt{5} - \sqrt{7}$
- The multiplicative inverse of  $\frac{\sqrt{2}}{10}$  is  $\dots\dots\dots$   
 a)  $2\sqrt{2}$                       b)  $5\sqrt{2}$                       c)  $\sqrt{2}$                       d)  $\sqrt{10}$
- $[2, 7] - \{2, 7\} = \dots\dots\dots$   
 a)  $\{2, 7\}$                       b)  $\emptyset$                       c)  $]2, 7[$                       d)  $]2, 7[$
- $\sqrt[3]{3} + \sqrt[3]{3} = \dots\dots\dots$   
 a) 3                      b)  $2\sqrt[3]{3}$                       c)  $\sqrt[3]{9}$                       d)  $\sqrt[3]{6}$

**3 Simplify:** If the straight line

$$y = 2x + 3 \text{ cuts}$$

$x$  - axis at A and  $y$ - axis at B

Find the area of  $\triangle ABO$  where O is the origin.

**4 Find the S.S in R of the following:**

- $3x - 1 \geq 8$
- $(2x - 1)^3 = 8$

**5 The following table shows the weekly wages in pounds of 50 workers in a factory:**

Sets	5-	15-	25-	35-	45-	Total
Frequency	7	10	12	13	8	50

Find the mean of the wage of the worker in pounds.

**1** Choose the correct answer from the given ones:

(a)  $\frac{1}{2} \sqrt{20} = \dots\dots\dots$   $[\sqrt{5}, \sqrt{10}, 2\sqrt{5}, 5\sqrt{2}]$

(b) The cube whose volume is  $250 \text{ cm}^3$ , the area of one face of this cube =  $\dots\dots\dots$   
 $\text{cm}^2$   $[50, 125, 20\sqrt[3]{2}, 25\sqrt[3]{4}]$

(c) If  $]-\infty, 2] \cup [2, \infty[ = \dots\dots\dots$   
 $(\mathbb{R}, \mathbb{R} - \{-2, 2\}, \mathbb{R} - [-2, 2], \mathbb{R} - ]-2, 2[)$

(d) The next number to  $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}$  is  $\dots\dots\dots$   
 $[\sqrt{40}, \sqrt{42}, \sqrt{50}, \sqrt{38}]$

(e) The mean of the values 24, 25, 22, 23, 29 =  $\dots\dots\dots$   $[23.24, 24.4, 24.6]$

**2** Complete the following:

(a) If  $x \in [-2, 3] =$ , then  $2x + 1 \in \dots\dots\dots$   $[ \dots\dots\dots, \dots\dots\dots ]$

(b) If the slope of  $\overleftrightarrow{AB}$  is equal to the slope of  $\overleftrightarrow{BC}$  then A, B and C are  $\dots\dots\dots$

(c) The multiplicative inverse of  $\frac{\sqrt{3}}{6}$  is  $\dots\dots\dots$

(d) If  $x = (\sqrt{5} + \sqrt{3})$ ,  $y = (\sqrt{5} - \sqrt{3})$ , then  $(xy)^3 = \dots\dots\dots$

(e) The mode of the values 23, 32, 33, 22, 24, 32, 23, 24, 33, 22, 32 is  $\dots\dots\dots$

**3** (a) Put in the simplest form:

$$\frac{1}{4} \sqrt{80} - \sqrt{20} - \sqrt{45} + \sqrt{125}$$

(b) a- If  $x = \sqrt{7} + \sqrt{3}$ ,  $y = \frac{2}{\sqrt{7} + \sqrt{3}}$ , prove that x and y are conjugates, then  
 find the values of  $x^2 - 2xy + y^2$

**4** (a) Find the solution set of the inequality  $7x - 12 \geq 5x - 8$ , in  $\mathbb{R}$ , in a form of an interval.

And represent it on the number line.

(b) Graph the relation  $x - 2y = 1$ , then find the slope of straight line

**5** (a) Find the radius of a right circular cylinder whose volume is  $40\pi$ , and its height is 10 cm?



(b) The following table shows the frequency distribution of the marks of 100 students in the exam. Find the mean of the student's marks?

Sets	10-	20-	30-	40-	50-	Total
Frequency	10	20	25	30	15	100

**Menofia**

**14**

**Educational Shebeen Elkom Directorate - Idel School**

**Answer the following questions:**

**1 Choose the correct answer:**

1)  $[2, 6] - \{2, 8\} = \dots\dots\dots$

- a)  $\emptyset$                       b)  $\{2, 6\}$                       c)  $[2, 6]$                       d)  $]2, 6]$

2)  $\sqrt{\dots\dots\dots} = \sqrt[3]{64} \dots\dots\dots$

- a) 4                      b) 16                      c) 64                      d) -64

3) The ordered pair (0, -3) dose not satisfy the relation .....

- a)  $2x + 3y = 12$                       b)  $2x - 3y = 12$                       c)  $3x - 4y = 12$                       d)  $3x + 4y = 12$

4) The S.S of the equation  $x^2 - 9 = 0$  ine R is .....

- a)  $\{3\}$                       b)  $\{-3\}$                       c)  $\{\pm 3\}$                       d)  $\emptyset$

5) The multiplicative inverse of the number  $\frac{2}{\sqrt{3}}$  is .....

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

**2 Complete:**

(a)  $[3, \infty] \cap ]-1, 8] = \dots\dots\dots$

(b)  $\sqrt[3]{3} + \sqrt[3]{24} - 3\sqrt[3]{81} = \dots\dots\dots$

(c)  $\sqrt{8} \times \sqrt{2} = \sqrt[3]{\dots\dots\dots}$

(d) If the lateral area of a cube is  $100 \text{ cm}^2$ . then its volume = .....

(e) The number  $\sqrt{29}$  is included between the two consecutive integers ..... and .....

**3 (a)** If  $x = \sqrt{7} + \sqrt{3}$  ,  $y = \frac{4}{\sqrt{7} + \sqrt{3}}$  . Find the value of  $x^2 + 2xy + y^2$

**(b)** Find the S.S of the following inequality  $2x + 8 > 3x - 5 > 2x - 8$  , in R in a form of an interval , then represent the S.S on number line.

**4 (a)** If A(2, 1) , B (3, -1) , C (0, 5 ) Are A, B , C collinear.

**(b)** Find the volume of the cylinder whose radius length is 21 cm and height 4 cm, then find its lateral surface area. ( $\pi = \frac{22}{7}$ )

- 5 From the following frequency distribution draw the histogram and from the draw find the mode.

Sets	10-	20-	30-	40-	50-	60-	Total
Frequency	15	15	20	25	15	10	100

Draw a bar chart for the frequency table data.

Gharbia

15

## Samannoud Educational Directorate Samannoud Experimental Language School

Answer the following questions:

- 1 Choose the correct answer from the given ones:

1) The irrational number ..... lies between 2 and 3.

- a) 4                      b)  $2\frac{1}{2}$                       c)  $\sqrt{5}$                       d)  $\sqrt{10}$

2)  $[3, 7] - \{3, 7\} = \dots\dots\dots$

- a)  $\{0\}$                       b)  $\emptyset$                       c)  $[3, 7]$                       d)  $]3, 7[$

3) The slope of straight line parallel to y- axis is .....

4)  $\sqrt{12} - \sqrt{3} = \dots\dots\dots$

- a)  $\sqrt{9}$                       b)  $\sqrt{3}$                       c) 3                      d) 4

5) The mode of the values: 4, 5, 6, 4 and 7 is .....

- a) 4                      b) 5                      c) 6                      d) 7

- 2 Complete each of the following:

a) If:  $-x > \text{zero}$ , then S.S in R is .....

b) The radius length of a sphere whose volume is  $\frac{9}{2} \pi \text{ cm}^3 = \dots\dots\dots \text{ cm}$

c) The multiplicative inverse of the number  $\sqrt{5} - 2$  is .....

d) The arithmetic mean of the values: 4, 6, 8 and 10 is .....

e) The median of the values 5, 10, 8, 12 and 11 is .....

- 3 (a) Find the slope of  $\overrightarrow{AB}$  where A (7, 2), B (-2, 0)

(b) If  $A = \sqrt{5} - \sqrt{3}$ ,  $B = \frac{2}{A}$ . Find the value of the expression:  $A^2 - 2AB + B^2$

- 4 (a) Find in R the S.S of each of the following

1)  $3x + 5 > 2$

2)  $x^2 + 3 = 19$

(b) Calculate the radius length of the right cylinder whose volume is  $2156 \text{ cm}^3$  and its height is 14 cm. ( $\pi = \frac{22}{7}$ )

5 (a) If  $x = [-3, 2[$  and  $y = [-1, 4]$ , find in the form of interval using the number line each of the following:

- 1)  $X \cap Y$                       2)  $X - Y$

(b) The following table shows the frequency distribution of marks of 60 students in an exam.

Sets	5-	10-	15-	20-	25-	30-	35-
Frequency	2	5	15	20	13	5	1

Form the ascending cumulative frequency table and represent it graphically.

**Behera**

**16**

**Rasheed Education Zone - Rosetta Language School**

1 **Complete:**

- a)  $\sqrt[3]{64} - \sqrt{16} = \dots\dots\dots$   
 b) The ordered pair (3, ..... ) satisfies the relation  $x - 3y = 9$   
 c)  $[-1, 5] \cap [3, 7] = \dots\dots\dots$   
 d) The median of 23, 42, 17, 30 and 20 is .....  
 e) If the lower limit of a set is 4 and its upper limit is 8 then its centre is .....

2 **Choose the correct answer:**

- a) The conjugate of the number  $\sqrt{5} - \sqrt{2}$  is .....  
 ( $\sqrt{5} + \sqrt{2}$ ,  $\sqrt{5} - \sqrt{2}$ ,  $2\sqrt{5}$ ,  $\sqrt{2} - \sqrt{5}$ )  
 b) The multiplicative inverse of  $\frac{\sqrt{3}}{6}$  is ..... ( $6\sqrt{3}$ ,  $2\sqrt{3}$ ,  $\sqrt{6}$ ,  $\sqrt{3}$ )  
 c) The volume of the cube of side length 3 cm is .....  
 ( $3 \text{ cm}^3$ ,  $27 \text{ cm}^3$ ,  $27 \text{ cm}$ ,  $9 \text{ cm}$ )  
 d) The mean of 4, 5, 6, 8, 2 is ..... ( $4, 5, 6, 7$ )  
 e) The S.S. of the equation  $x^3 = 64$  is ..... where  $X \in R(4, 8, \{4\}, \{8\})$

3 a) If  $a = \sqrt{3} + \sqrt{2}$ ,  $b = \frac{1}{\sqrt{3} + \sqrt{2}}$  find the value of  $a + b$   
**in the simplest form.**

b) If A (-5, 6), B (1, 3), C (3, y) are collinear, find the value of y.

4 a) Find in R. The S.S. of the equation  $\sqrt{2}x - 1 = 5$

b) Find the volume of right cylinder whose height is 6 cm and length of its base radius is 1.4 cm  
 ( $\pi = \frac{22}{7}$ )

- 5 a) Find S.S. in R of the inequality  $-1 < 2x + 3 \leq 7$  and represent it on the number line.

b)

Sets	2-	6-	10-	14-	18-	22-	26-
Frequency	3	5	8	10	7	5	2

Using ascending cumulative frequency table to get the median.

**Damietta**

**17**

**Experimental Language School**

**Answer the following questions:**

- 1 Choose the correct answer:

- a) The relation  $10 + y = 5x$  is represented by a straight line cutting x - axis in at .....  
 $((2, 0), (-2, 0), (0, 2), (0, -2))$
- b) The irrational number between 3 and 4 is .....  $(3.5, \frac{1}{8}, \sqrt{13}, \sqrt{20})$
- c) The mean of marks of 5 pupils is 30 then the total of their marks is .....  
 $(6, 25, 35, 150)$
- d) The S.S.  $-x > 3$  in R is .....  $(\{3\}, |3, |, -3|, -3|)$
- e) The S.S.  $\sqrt{2} X = 2$  in R is .....  $(\sqrt{2}, 2\sqrt{2}, 2, \emptyset)$

- 2 Complete to form a correct statement:

- a)  $Q \cup Q^c = \dots\dots\dots$
- b) If  $\sqrt[3]{X} = -\sqrt{4}$  then  $X = \dots\dots\dots$
- c) Complete using  $\in$  or  $\notin$   $103 \times 10^{-5} \dots\dots\dots R_+$
- d) The median 23, 13, 15, 30, 11 is .....  
e) If the lower limit of set is 8 and the upper limit of the same set is 14 then the center is .....

- 3 a) Prove that  $2\sqrt{32} - \sqrt{50} - \frac{1}{3}\sqrt{162} = 0$

- b) If the slope of the straight line passing by  $(-1, 3), (x, 2)$  is undefined find x.

- 4 a) Find the S.S and represent on the number line  $15 \leq 5X < 30$  where  $X \in R$ .

- b) If  $A = \sqrt{3} + \sqrt{2}$ ,  $B = \frac{1}{\sqrt{3} + \sqrt{2}}$  find value of  $A^2 B^2$ .

- 5 a) If  $X = [0, 3], Y = ] 0, 7]$  find the following using number line.

- a)  $X \cap Y$                       b)  $X \cup Y$

- b) The following table shows frequency distribution for the scores of 40 students in an exam.

Set	30-	40-	50-	60-	70-	80-	Total
Frequency	3	4	12	8	7	5	40

Graph the frequency histogram, then find the mode.

Answer the following questions:

① Choose the correct answer:

- 1) The irrational number which lies between 2 and 3 is .....  
 a)  $\sqrt{10}$                       b)  $\sqrt{7}$                       c) 2.5                      d)  $\sqrt{3}$
- 2)  $-5 \dots\dots\dots ]-$  ,  $-6[$   
 a)  $\in$                       b)  $\notin$                       c)  $\subset$                       d)  $\not\subset$
- 3)  $1 + \sqrt{2} \dots\dots\dots \sqrt{3}$   
 a)  $<$                       b)  $>$                       c)  $=$                       d)  $\geq$
- 4) If the ordered pair  $(-1, 3)$  satisfies the relation  $3X - y = C$  Then  $C = \dots\dots\dots$
- 5) The surface area of a square whose side length is  $\sqrt{3} = \dots\dots\dots \text{cm}^2$ .  
 a)  $4\sqrt{3}$                       b) 9                      c) 3                      d) 6

② Complete:

- 1) The intersection point of the ascending and descending cumulative frequency curves determines ..... on the sets axis.
- 2)  $\sqrt[3]{a^3} = \dots\dots\dots$
- 3) The lower limit of a set is 4 and its center is 9 , then its upper limit is = .....
- 4) If the ages of 5 students are 13 , 15 , 16 , 14 and 17 years old, then the mean of their ages = ..... years.
- 5)  $]3, 9[ \cup \{9\} = \dots\dots\dots$

③ a) If  $x = \frac{4}{\sqrt{7} - \sqrt{3}}$  ,  $y = \sqrt{7} - \sqrt{3}$

**Prove that:** x and y are conjugates, then find the values of:

- a)  $(x + y)$                       b)  $xy$
- b) If the slope of the straight line  $\overleftrightarrow{AB}$  is 7 where A (1 , 2) , B (3 , x) find x.

④ a) If  $x = [-2, 3]$  ,  $y = [1, 5[$

Find the following using the number line

- a)  $x \cup y$                       b)  $x \cap y$
- b) Find the solution set for the inequality  $3x - 1 < 5$ , in R in the form of interval, then graph the solution on the number line.

⑤ a) The volume of a sphere is  $562.5 \pi \text{ cm}^3$ . Find its surface area.

b) The following table shows frequency distribution of the daily wages of some workers.

Sets	5-	10-	15-	20-	25-	30-	Total
Frequency	10	14	24	30	12	10	100

**Required:** Graph the descending cumulative frequency curve.

Answer the following questions:

**1 Choose the correct answer:**

- 1) The median of the numbers 3, 6, 2, 4, 9 is .....  
 (a) 2                      b) 6                      c) 4                      d) 9
- 2) The mode of the values 3, 5, 3, 6, 3 is .....  
 (a) 3                      b) 5                      c) 6                      d) 8
- 3) Which of the the following ordered pairs satisfies the relation  $2x + y = 5$   
 (a) (-1,3)              b) (1,3)              c) (3,1)              d) (2,2)
- 4) The additive inverse of  $(7 - \sqrt{2})$  is .....  
 (a)  $(7 + \sqrt{2})$       b)  $(-7 - \sqrt{2})$       c)  $(\sqrt{2} - 7)$       d)  $\sqrt{5}$
- 5) The S.S of the equation:  $x^2 + 16 = 0$  in R is .....  
 (a)  $\pm 4$               b) -4              c) 4              d)  $\emptyset$

**2 Complete:**

- 1)  $R_+ \cap [-1, 3]$  .....
- 2)  $\sqrt[3]{64} - \sqrt{16} = \dots\dots\dots$
- 3) The S.S of the inequality  $-x > 3$  in R is .....
- 4)  $[1, 7] - \{1, 7\} = \dots\dots\dots$
- 5) If the volume of a cube is  $27 \text{ cm}^3$ , then the length of its side is .....

**3 (a)** If  $x = \sqrt{5} + -\sqrt{2}$ ,  $y = \sqrt{2} - \sqrt{2}$ , then find the value of:  $\frac{x+y}{xy-1}$

**(b)** If the slope of the straight line  $\overleftrightarrow{AB}$  in  $\frac{5}{3}$  where A (3,5), B (-3,4) find the value of y

Answer the following questions:

**1 Complete:**

- a) If  $\sqrt[3]{x} = 5$  then  $x = \dots\dots\dots$
- b) (k,2) satisfies the relation  $6x + 5y = 13$  then  $k = \dots\dots\dots$
- c) The conjugate of  $5 - \sqrt{7}$  is .....

d) The S.S of  $x^2 + 25 = 0$  in R is .....

e) If the lower limit of a set is 4 and the upper limit of the same set is 10 then the centre of the set = .....

**2 Choose the correct answer:**

a) .....  $Q'$  ( $3, \sqrt{3}, \sqrt{16}, \sqrt[3]{8}$ )

b)  $\{x: x \in R, x > 0\}$  ( $R^+, R^-, R^*, R$ )

c) The multiplicative inverse of  $\frac{\sqrt{3}}{6}$  is ..... ( $-\frac{\sqrt{3}}{6}, 6\sqrt{3}, 2\sqrt{3}, -2\sqrt{3}$ )

d) If the mode of the values 3, 5,  $x + 1$ , 5, 3, 1 is 5 then  $x =$  ..... ( $5, 4, 3, 6$ )

e) If the edge length of a cube is 4 cm then the volume of a cube = .....  $cm^3$  ( $4, 16, 64, 12$ )

**3 (a) Find in R the S.S of:**

$4 < 3x + 4 \leq 7$  and represent it on the number line.

**(b) If:**

$A = \sqrt{3} + \sqrt{2}$  ,  $B = \frac{1}{\sqrt{3} + \sqrt{2}}$  Find the value of  $A^2 + B^2$

**4 (a) Find the slope of the straight line that passes through the two ordered pairs (2,0), (0,3)**

**(b) If:**

$X = ] - \infty, 4]$  ,  $Y = ] - 2, 7]$

Find each of the following using the number line:

1)  $X \cap Y$       2)  $X \cup Y$       3)  $X - Y$

**5 (a) Find the volume of a right circular cylinder its radius length 7 cm and its height is 10 cm. ( $\pi = \frac{22}{7}$ )**

**(b) Find the mode of the following table:**

Sets	2 –	6–	10–	14–	18 –	22 –
Frequency	3	5	6	10	7	2

Answer the following questions:

**1 Choose the correct answer:**

- 1)  $Q \cap Q'$  .....  
 (a)  $\{0\}$                       b)  $\emptyset$                       c) R                      d) Q
- 2) The mean of the value 7, 15, 19, 14 and 15 .....  
 (a) 14                      b) 15                      c) 16                      d) 17
- 3) If the volume of a sphere  $\frac{32}{3} \pi \text{ cm}^3$ , then its radius length = ..... cm  
 (a) 14                      b) 2                      c) 4                      d) 16
- 4)  $[-1, 3] - \{3\} =$  .....  
 (a)  $] -1, 3 [$                       b)  $[-1, 3]$                       c)  $] -1, 3 ]$                       d)  $[-1, 3 [$
- 5) The S.S of  $x^2 = 16 = 0$ ,  $x \in Q$  is .....  
 (a) 4                      b)  $\pm 4$                       c) 16                      d) 8

**2 Complete:**

- 1) The mode of the numbers 6, 10, 8, 4, 6, 7, 6 equals .....
- 2) The additive inverse for  $(1 - \sqrt{2})$  is .....
- 3) The slope of the straight line  $y = 2$  is .....
- 4)  $] - \infty, 2] \cup [-3, \infty [ =$  .....
- 5) The solution set in R of the inequality  $2x + 3 > 13$  is .....

**3 (a) Put in the simplest form:**

$$\sqrt{18} + 3\sqrt[3]{\frac{1}{3}} - \sqrt{8} - \sqrt[3]{9}$$

**(b) Find the solution set in R  $(2x + 3)^3 + 4 = 12$**

**4 (a) A right circular cylinder of height 10 cm. and its volume is  $1540 \text{ cm}^3$ . Find its total area.**

**(b) Find in R the S.S. of the inequality  $5x + 7 \geq 2x - 11$**

**5 (a) Find the value of k where (k,k) satisfies the relation  $2x + y = 12$**

**(b) Find the mean of the following table:**

Sets	5 –	15–	25–	35–	45 –	Total
Frequency	7	9	12	8	4	40



**1 Choose the correct answer:**

- 1)  $4 \in \dots\dots\dots$   
 (a)  $] -3, \infty[$       b)  $] -\infty, 3[$       c)  $(3, 5)$       d)  $] 4, \infty[$
- 2) The slope of the straight line  $x = 1$  in  $\dots\dots\dots$   
 (a)  $-1$       b)  $0$       c)  $1$       d) undefined
- 3) The mean of the numbers: 7, 8, 3 and 6 is  $\dots\dots\dots$   
 (a) 5      b) 6.5      c) 6      d) 8
- 4) If the volume of a sphere  $= 36 \pi \text{ cm}^3$  then the radius is  $\dots\dots\dots \text{ cm}$ .  
 (a) 4      b) 27      c) -3      d) 3
- 5) The multiplicative inverse of  $\frac{\sqrt{2}}{6}$  is  $\dots\dots\dots$   
 (a)  $\sqrt{3}$       b)  $\sqrt{6}$       c)  $3\sqrt{2}$       d)  $-\frac{3}{\sqrt{2}}$

**2 Complete:**

- 1)  $\sqrt[3]{-64} + \sqrt{16} = \dots\dots\dots$
- 2) The mode of the values: 5, 3, 8, 5 and 9 is  $\dots\dots\dots$
- 3) The S.S in R of the equation:  $x^2 - 5 = 0$  is  $\dots\dots\dots$
- 4) The conjugate of the number  $\frac{2}{\sqrt{5} - \sqrt{3}}$  in the simplest form is  $\dots\dots\dots$
- 5) The median of the values: 3, 9, 2, 7, 6 and 11 is  $\dots\dots\dots$

**3 (a) If  $X = ] -1, 4]$ ,  $Y = [2, \infty[$  Find: 1)  $X \cap Y$     2)  $X \cup Y$** 

- (b)** Find the solution set of the following inequality in R  $-3 \leq 2x - 1 < 5$   
 then represent the S.S. on the number line.

**4 (a) Put in the simplest form:**

$$\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$$

- (b) Find the volume of the right circular cylinder of radius length is 7 cm. and its height is 10 cm. ( $\pi = \frac{22}{7}$ )**

**5 (a) If A (-1,2), B (3,0), C (k,-1) are on the same straight line find the value of k**

- (b) The following table shows the frequency distribution of weight of 40 children in k.g:**

Sets	5 –	15–	25–	35–	45 –	Total
Frequency	7	9	12	8	4	40

Calculate the mean of weight of children

**Exam ( 1 ) algebra**

**Complete the following:**

- 1 The slope of the straight line parallel to X-axis is .....
- 2 If the mode of the values : 18 , 11 , 4 , 2 X is 18 , then X = .....
- 3 If (k , 2) represents the relation :  $X + 2y = 5$  , then k = .....
- 4 If the order of the median of some values is the seventh , then the number of these values is .....
- 5 The median of : a + 2 , a , a - 2 , a - 1 , a + 1 is .....

**Choose the correct answer:**

- 1  $[3 , 5] - ]3 , 5[ =$  .....  
 (a)  $\emptyset$  (b)  $[3 , 5]$  (c)  $]3 , 5[$  (d)  $\{3 , 5\}$
- 2 If the point (a , 1) satisfies the relation :  $X + y = 5$  , then a = .....  
 (a) - 4 (b) 1 (c) 4 (d) 5
- 3 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....  
 (a) 2 (b) 4 (c) 6 (d) 8
- 4 If the radius length of a sphere is 6 cm. , then its volume is .....  $\text{cm}^3$ .  
 (a)  $6\pi$  (b)  $36\pi$  (c)  $72\pi$  (d)  $288\pi$
- 5  $\sqrt{100 - 36} = 10 -$  .....  
 (a) - 6 (b) 2 (c) 4 (d) 6
- 6 The intersection point of the ascending and descending cumulative curves determines the ..... on the sets axis.  
 (a) order of the median (b) median  
 (c) mean (d) mode

**Question 3:**

- [a] Find the S.S. of the inequality :  $-2 \leq 3X + 7 < 10$  in  $\mathbb{R}$  , then represent the interval of solution on the number line.
- [b] Find the height of a right circular cylinder whose height is equal to its base radius length and its volume is  $72\pi \text{ cm}^3$

**Question 4:**

[a] The area of a sphere is  $616 \text{ cm}^2$ . Find its diameter length  $\left(\pi = \frac{22}{7}\right)$

[b] Graph the relation :  $y = 2x$

[c] Find the slope of  $\overrightarrow{AB}$  where  $A(-1, 5)$ ,  $B(2, 6)$

---

**Question 5:**

[a] If  $A = [-2, 3]$ ,  $B = ]0, 5[$ , using the number line find :

1  $A \cup B$

2  $A \cap B$

3  $A - B$

[b] From the following frequency distribution :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	7	10	8	6	9	40

Find the mean.

---



**Exam (2) algebra:**

**Complete the following:**

- 1 The multiplicative inverse of the number  $\sqrt{10} - 3$  is .....
- 2  $[3, 5] - ]3, 5[ = \dots\dots\dots$
- 3 The median of the numbers : 41 , 19 , 15 , 30 , 20 is .....
- 4  $\sqrt{18} - \sqrt{2} = \dots\dots\dots$
- 5 If the slope of the straight line passing through (2 , k) , (3 , - 1) is 2 , then k = .....

**Choose the correct answer:**

- 1 The simplest form of  $(\sqrt{3} - \sqrt{2})(\sqrt{3} + \sqrt{2})$  is .....  
 (a)  $\sqrt{3}$  (b) 1 (c)  $\sqrt{2}$  (d)  $\sqrt[3]{3}$
- 2 The volume of a cube is  $64 \text{ cm}^3$  , then its edge length is ..... cm.  
 (a) 4 (b) 8 (c) 16 (d) 64
- 3 The mean of the values : 34 , 23 , 25 , 40 , 22 , 12 is .....  
 (a) 22 (b) 23 (c) 24 (d) 26
- 4 If the point (k , 1) satisfies the relation :  $x + y = 5$  , then k = .....  
 (a) 1 (b) - 4 (c) 4 (d) 5
- 5  $(2\sqrt[3]{2})^3 = \dots\dots\dots$   
 (a) 4 (b) 8 (c) 16 (d) 40
- 6 If the mode of the values : 4 , 11 , 8 , 2 X is 4 , then X = .....  
 (a) 2 (b) 4 (c) 6 (d) 8

**Question 3:**

- [a] Find in the simplest form :  $\sqrt{18} + \sqrt{32} - 3\sqrt{2} - \frac{1}{2}\sqrt{8}$
- [b] If  $x = \sqrt{5} - \sqrt{2}$  ,  $y = \frac{3}{\sqrt{5} - \sqrt{2}}$  , prove that : x and y are two conjugate numbers.

**Question 4:**

**[a]** Represent graphically the linear relation :  $y = 2 - x$

**[b]** Find the solution set of the inequality :

$-2 < 3x + 7 \leq 10$  in  $\mathbb{R}$  , then represent the S.S. on the number line.

---

**Question 5:**

**[a]** A right circular cylinder of radius length 4 cm, and its height is 9 cm.

Find its volume in terms of  $\pi$

**[b]** Find the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

---



**Exam (3) algebra:**

**Complete the following:**

- 1  $\sqrt[3]{64} = \sqrt{\dots\dots\dots}$
- 2 In the relation :  $y = 3x + 4$  , if  $y = 1$  , then  $x = \dots\dots\dots$
- 3 If the mode of the values : 12 , 7 ,  $x + 1$  , 7 , 12 is 7 , then  $x = \dots\dots\dots$
- 4  $[-2, 5[ \cap \mathbb{R}_+ = \dots\dots\dots$
- 5 The median of the set of values : 34 , 23 , 25 , 40 , 22 , 4 is  $\dots\dots\dots$

**Choose the correct answer:**

- 1 The S.S. of the equation :  $x(x^2 + 4) = 0$  in  $\mathbb{R}$  is  $\dots\dots\dots$   
 (a)  $\{4\}$  (b)  $\{0\}$  (c)  $\{-4, 0\}$  (d)  $\{4, -4\}$
- 2 The slope of the straight line which is perpendicular to  $x$ -axis is  $\dots\dots\dots$   
 (a) 1 (b) zero (c)  $-1$  (d) undefined.
- 3 If the arithmetic mean of the numbers : 5 , 4 ,  $x - 3$  , 6 , 4 is 4 , then  $x = \dots\dots\dots$   
 (a) 5 (b) 4 (c) 6 (d) 3
- 4 If the mode of the numbers : 5 , 2 , 4 ,  $x - 2$  is 5 , then  $x = \dots\dots\dots$   
 (a) 4 (b) 6 (c) 7 (d) 5
- 5 If  $-2x < 6$  , then  $x \dots\dots\dots$   
 (a)  $< 6$  (b)  $> -3$  (c)  $> 6$  (d)  $> -6$
- 6  $\mathbb{Z} \cap \mathbb{N} = \dots\dots\dots$   
 (a)  $\{0\}$  (b)  $\mathbb{Z}_-$  (c)  $\mathbb{N}$  (d)  $\mathbb{Q}$

**Question 3:**

- [a] Represent the relation :  $2x + y = 4$  , then find the slope of the straight line representing this relation.
- [b] If  $x = \frac{1}{\sqrt{7} + \sqrt{6}}$  ,  $y = \sqrt{7} + \sqrt{6}$  , prove that :  $x$  and  $y$  are two conjugate numbers , then find :  $(x + y)^2$  in the simplest form.



**Question 4:**

- [a] The radius length of the base of a right circular cylinder is 4 cm. and its height is 9 cm.  
Find the volume in terms of  $\pi$ .
- [b] If A (2 , -1) , B (10 , 3) and C (2 , 3) , find the slope of each of  $\overrightarrow{AB}$  and  $\overrightarrow{BC}$

**Question 5:**

- [a] Find the S.S. in  $\mathbb{R}$  for the inequality :

$$\sqrt[3]{-8} \leq x + 1 \leq \sqrt{9} , \text{ then represent it on the number line.}$$

- [b] From the following frequency distribution :

The set	10 –	20 –	30 –	40 –	50 –	Total
Frequency	10	20	25	k	15	100

Find : **1** The value of k **2** The arithmetic mean.



Answer the following question :

1) Choose the correct answer :

- 1)  $\sqrt{25} - \sqrt{-125} = \dots\dots\dots$   
a) 0      b) 10      c) 5      d)  $\pm 5$
- 2) The slope of the straight line parallel to  $x$  axis is  $\dots\dots\dots$   
a) positive   b) negative   c) zero      d) undefined
- 3) If the mode of the set of values 4, 11, 8, 2x is 4, then  $x = \dots\dots\dots$   
a) 2      b) 4      c) 6      d) 8
- 4) If the point ( a, 1) satisfies the relation  $x + y = 5$ , then  $a = \dots\dots\dots$   
a) 1      b) -4      c) 4      d) 5
- 5) If the volume of a cube is  $27 \text{ cm}^3$ , then the edge length is  $\dots\dots\dots$   
a) 3cm      b)  $9 \text{ cm}^2$       c) 9 cm      d)  $54 \text{ cm}^2$
- 6) If the lower limit of a set is 4 and the upper limit is 8,  
then its center is  $\dots\dots\dots$   
a) 4      b) 6      c) 4      d) 8

Complete :

- 1) The multiplicative inverse for  $(\sqrt{3} + \sqrt{2})$  is  $\dots\dots\dots$
- 2) The slope of the straight line which passes through  
( 2, -5), B( 3, -2) is  $\dots\dots\dots$
- 3)  $\{1, 5\} - \{1, 5\} = \dots\dots\dots$
- 4) If  $x^3 + 9 = 1$ , where  $x \in R$ , then  $x = \dots\dots\dots$
- 5) The median of the values : 2, 3, 5, 7, 9 is  $\dots\dots\dots$

3) (a) Simplify :  $\sqrt{72} + 3\sqrt{18} - 2\sqrt{\frac{1}{2}}$

(b) Find the solution set of the inequality :  
 $-2 < 3x + 7 \leq 10$  in  $R$ , then represent the  
interval of S.S. on the number line.

4) (a) If  $x = [-2, 4]$ ,  $y = [1, 6]$

Find by using number line :  $x \cap y$ ,  $x \cup y$

(b) If  $X = 3 + \sqrt{5}$ ,  $Y = \frac{4}{3 + \sqrt{5}}$

prove that: X, Y are conjugate numbers and find  
the value of :  $(X - Y)^2$

5) (a) Graph the relation  $Y = X + 2$

and if ( -4, a ) satisfies the relation ,  
find the value of a

(b) Find the arithmetic mean of the following distribution:

Sets	5-	15-	25-	35-	45-	Total
Frequency	4	5	6	3	2	20

الامتحان التعليمي  
www.exam-eg.com

مركز الامتحان التعليمي



Time :

2 hours

Exam of geometry for the 2<sup>nd</sup> prep  
grade the first term 2018/2019

Fayoum governorate

Directorate of Education

school :

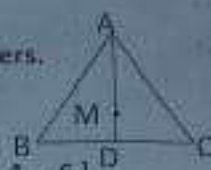
Calculator is allowed

Answer the following questions.

The first question: choose the correct answer from the given answers.

(1) In the opposite figure if  $MD = 2\text{cm}$  . M is the concurrence

point of the medians of the triangle ABC . then  $AD = \dots\dots\dots\text{cm}$  [ 1 , 3 , 4 , 6 ]



(2) If the measure of an angle in the isosceles triangle  $= 60^\circ$  Then the triangle is .....  
[ Right-angled , obtuse-angled , equilateral , scalene ]

(3) In  $\triangle ABC$  if  $m(\angle B) > m(\angle C)$  then  $AC \dots\dots AB$  [  $>$  ,  $\leq$  ,  $\geq$  ,  $<$  ]

(4) The lengths which can be lengths of sides of a triangle are

[ { 4 , 6 , 10 } , { 2 , 3 , 6 } , { 4 , 8 , 6 } , { 1 , 5 , 8 } ]

(5) In The opposite figure  $AC = BC$  ,  $m(\angle ACD) = 140^\circ$

Then  $m(\angle A) = \dots\dots^\circ$  [ 40 , 60 , 70 , 140 ]



(6) The sum of measures of the interior angles of a triangle =  $\dots\dots^\circ$

[ 80 , 90 , 180 , 360 ]

The second question: complete the following

(1) The medians of a triangle are .....

(2) The straight line drawn passing through the vertex angle of an isosceles triangle perpendicular to the base bisects each of ..... and .....

(3) If the measure of an angle in the Right-angled triangle  $= 45^\circ$  Then the triangle is .....

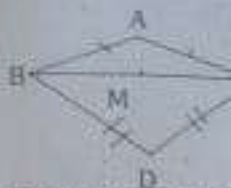
(4) The lengths of two sides in an isosceles triangle are 8cm , 4cm then the length of the third side = .....

(5) In a triangle if two sides have unequal lengths then the longer is opposite to .....

Rest of questions in the second page

The third question:

(a) In the opposite figure:  $AB=AC$ ,  $DB=DC$ ,  $M$  is The midpoint of  $\overline{BC}$  prove that:  $A, M$  and  $D$  are in the same straight line



(B) in the triangle  $ABC$   $m(\angle A) = 40^\circ$ ,  $m(\angle B) = 80^\circ$  arrange the lengths of sides the triangle  $ABC$  descendingly

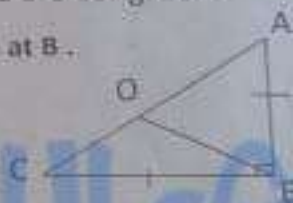
The forth question:

(a) prove that : the base angles in the isosceles triangle are congruent.

(b) In the opposite figure:  $ABC$  is a right-angled triangle at  $B$ .

$AB=6\text{cm}$ ,  $BC=8\text{cm}$ ,  $AC=10\text{cm}$   $O$  is the midpoint of  $\overline{AC}$

find with steps the perimeter of the triangle  $ABO$



The fifth question

(a) In the opposite figure  $AC > BC$ ,  $DH \parallel BC$

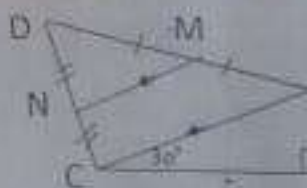
Prove that :  $AH > DH$



(b) In the opposite figure  $\overline{MN} \parallel \overline{AC}$

$AM=MD$ ,  $CN=ND$   $m(\angle B)=90^\circ$   $m(\angle ACB)=30^\circ$

prove that :  $AB = MN$



the questions are finished with best wishes

1) Complete :

- a)  $\sqrt{8} + \sqrt{2} = 3\sqrt{2}$   
 b)  $[1,3] \cup [2,5] = [1,5]$   
 c) The S.S. of the equation  $x^2 - 5 = 0$  in  $\mathbb{R}$  is  $\pm\sqrt{5}$   
 d) The volume of a cylinder whose base area  $25 \text{ cm}^2$  and its height  $10 \text{ cm} = 250 \text{ cm}^3$   
 e) The multiplicative inverse of  $\sqrt{3} + \sqrt{2}$  is  $\frac{\sqrt{3} - \sqrt{2}}{1}$  (in the simplest form)  
 f)  $[2, 5] - \{2, 5\} = (2, 5)$

2) Choose the correct answer:

- a)  $(2\sqrt{2})^3 = 16\sqrt{2}$  (4, 8, 16, 40)  
 b) The volume of a cube is  $27 \text{ cm}^3$  then the area of one face is  $9 \text{ cm}^2$  (3, 9, 36, 54)  
 c) The mode of the set of values 4, 11, 8, 2x is 4 then  $x = 4$  (2, 4, 6, 8)  
 d) If the lowest limit of a set is 4 and the upper limit is 8 then its center is 6 (2, 4, 6, 8)  
 e) If  $X = \{\sqrt{7} + \sqrt{2}\}$ ,  $Y = \{\sqrt{7} - \sqrt{2}\}$ , then  $x - y = 2\sqrt{2}$  ( $2\sqrt{7}$ ,  $7\sqrt{2}$ ,  $\sqrt{41}$ ,  $2\sqrt{2}$ )

3) a) Reduce:  $2\sqrt{5} + 6\sqrt{\frac{1}{5}} - \sqrt{27} - 5\sqrt{\frac{1}{3}}$

- b) If  $X = \frac{4}{3+\sqrt{5}}$ ,  $Y = 3 + \sqrt{5}$  prove that x, y are conjugate numbers then find  $x^2 + y^2$

a) Find the S.S of  $-2 \leq 3x + 7 < 10$  in  $\mathbb{R}$  then represent the interval of solution on the number line

- b) The volume of sphere is  $36\pi \text{ cm}^3$  calculate its radius length and its surface area.

a) The following table shows a frequency distribution

Sets	10 -	20 -	30 -	40 -	50 -	60 -	total
frequency	10	K	22	25	20	8	100

Find: 1) the value of K 15

2) the median using the ascending or descending cumulative curve

b) calculate the mean of the following values:

12, 13, 17, 18, 15 (15)