

Pretest DC

1) (5 marks) Given the polynomial: $-3x^3y^2 + 2y^3 - 12$

- Give the number of terms
- What is the degree of this polynomial?
- Identify the numerical coefficient of the first term
- Identify the exponent of y in the first term
- Identify the constant term

2) (6 marks) Fill the space with one of the following symbols : \in , \notin , \subseteq , $\not\subseteq$:

- | | | |
|----|---------------|--------------|
| a. | -3 | \mathbb{N} |
| b. | \mathbb{N} | \mathbb{Z} |
| c. | \mathbb{R} | \mathbb{N} |
| d. | 7.1 | \mathbb{R} |
| e. | $\sqrt{5}$ | \mathbb{N} |
| f. | $\frac{2}{5}$ | \mathbb{N} |

3) (4 marks) Round to the indicated position :

- $0.\bar{7}$ to the nearest tenth
- 333.66 to the nearest unit
- -0.0581 to the nearest hundredth
- $0.\bar{2}$ to the nearest tenth

4) (8 marks) Represent the following inequalities on a number line :

- $x \leq 4$, the universe is \mathbb{N} .
- $x > -2$, the universe is \mathbb{N} .
- $x \leq 3$, the universe is \mathbb{Z} .
- $x < -0.5$, the universe is \mathbb{R} .

5) (3 marks) Perform the following operations. Show all of your steps:

a. $1\frac{1}{4} \div \frac{2}{5} \times 1\frac{3}{4}$

b. $(-\frac{1}{4} - 1\frac{1}{2}) \div (\frac{1}{4} + \frac{1}{6} \times 3\frac{1}{2})$

c. $\frac{1}{3} - \frac{2}{5} \times 2\frac{1}{5} + (\frac{3}{8} + 2\frac{1}{4})$

6) (5 marks) Complete the following table :

Decimal	Fraction	Percent
		68%
0.3		
		40%
	$\frac{1}{8}$	
$0.\bar{4}$		

7) (3 marks) Simplify the following expressions :

a. Subtract $(-4x^2 + 2ax^2 - 5ax)$ from $(-3ax - x^2 + 2ax^2)$

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

c. $4m - 2n + 5mn - (2p + 3m - 5) + (4mn - 6m - 2)$

8) (6 marks) Solve the following equations:

a. $2(x - 4) - (3x - 2) = 2(3x + 5)$

b. $\frac{-20x + 4}{2} = 30$

c. $\frac{x-3}{2} - \frac{2x-1}{4} = 4 - \frac{x+2}{2}$

9) (6 marks) Solve the following inequalities (Represent each solution on a number line).

a. $-2x - 3 < x + 4$ in \mathbb{Z}

b. $0.5a - 2 + 1.4a > -a$ in \mathbb{N}

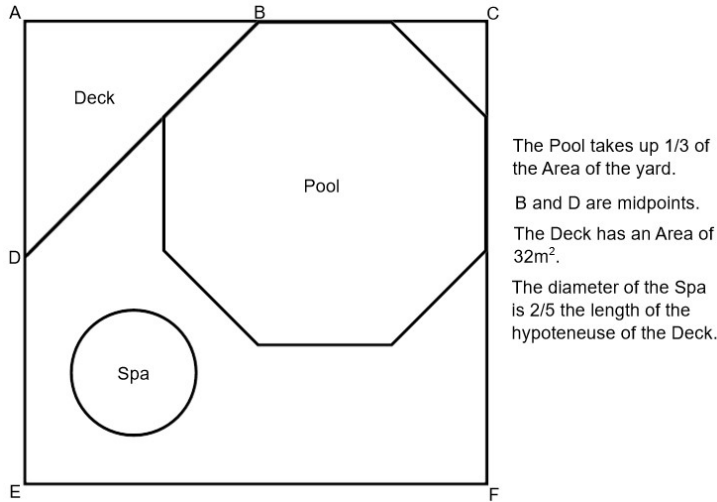
c. $\frac{-1+3b}{2} > \frac{1}{4}(16b - 8)$ in \mathbb{R}

10) (2 marks) Use the properties of proportions to solve :

a. $\frac{3}{2(x-4)} = \frac{4}{3(x-2)}$

b. $\frac{3}{2} = \frac{x-(-3)}{x-2}$

11) (4 marks) Below is a representation of Bunny's square back yard:



- Find the perimeter and area of the yard.
- Find the Area of the Pool.
- What is the Area and Circumference of the spa?

12) (5 marks) Find the volume and total area of a cone with height 5 cm and slant height 8cm.

13) (5 marks) If a cardboard box has a width of 10cm, a length that is triple the width and a Volume of 1500cm^3 , what is its height?

14) (5 marks) Find the volume of a square-based pyramid if the side length of the square is 12cm and the height of the pyramid is 16cm.

15) (5 marks) The lateral area of a sphere is equal to the area of a rectangle. The rectangle has a width of 25cm. If the radius of the sphere is 9cm, what is the perimeter of the rectangle?

16) (6 marks) The equations of lines L_1 and L_2 are, respectively: $y = \frac{2}{5}x - 3$ and $2x + 2y - 2 = 0$.

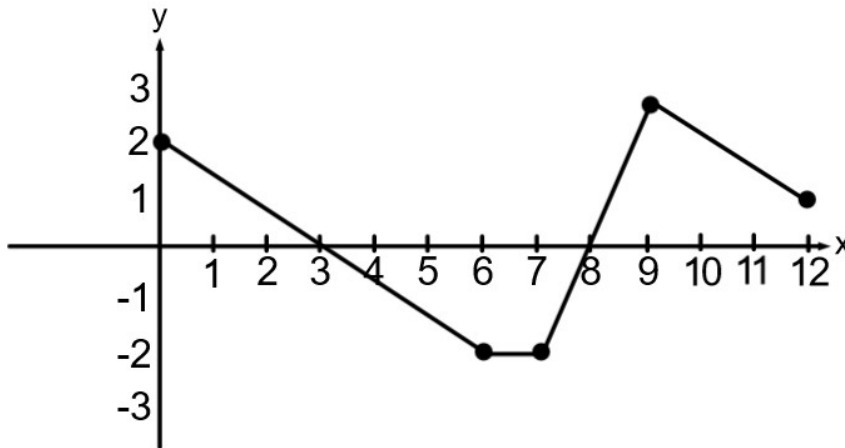
For each line:

- Find the slope.
- Find the y-intercept.
- Find the Zero.
- Find the intervals where the function is positive.
- Give the intervals where the function is increasing or decreasing. Justify your answer.
- Draw the two lines on the same graph.

17) (3 marks) For each case, find the equation of the corresponding line:

- The line passing through the points: $A(2, -3)$ and $B(-1, 4)$
- $b = 8$ and the line passes through $P(2, 6)$
- A zero of 2 and $a = \frac{3}{4}$

18) (6 marks) Use the following graph to determine:



- The increasing intervals
- The decreasing intervals
- The zeros
- The y-intercept
- The negative intervals
- The positive intervals

19) (5 marks) Below is a data distribution :

21,39,55,17,37,39,27,21,29,26,19,18,21,30,20,45,11,36,48

- Rearrange the data in increasing order.
- Give the value of the minimum, the maximum and the range.
- What is the mode of the distribution?
- Find the mean.
- Find the median.

20) (4 marks) Twenty-one students obtained the following results on a pretest:

59,73,68,81,73,55,46,84,70,77,80,93,87,72,60,62,88,72,34,78,90

State whether the following statements are true (T) or false (F). Justify your answer.

- The range of this distribution is 60
- More than 50% of the students obtained less than 70
- The median is greater than the mean
- The distribution has two modes

21) (4 marks) Below are the students' grades from 2 classes:

Class E				Class F					
	9	8	2						
7	4	3	3	3	0	4	4	7	
	7	5	4	3	6				
9	8	3	2	5	1	2	3	5	8
	4	3	0	6	3	4	5	6	9
		9	7	7					

Are the following statements true (T) or false (F)? Justify your answer.

- The median of Class F is higher than that of Class E
- The two distributions have the same mean
- The range of Class F is higher than that of Class E
- Both distributions are bimodal