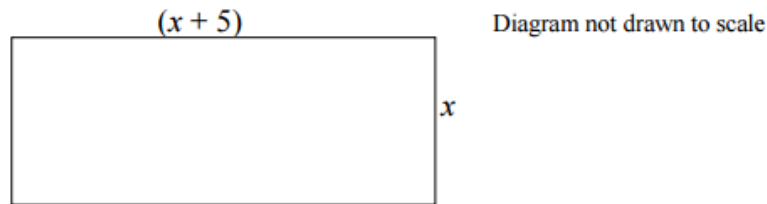


Class: VII  
Subject: Math's  
Topic: Intro to algebra  
No. of Questions: 20

Q1. Expression with two unlike terms is called \_\_\_\_\_

Q2. The width of a rectangle is  $x$  centimeters and its length is  $(x + 5)$  cm.



a. Write down an expression for the perimeter of the rectangle, giving your answer in its simplest form.

The perimeter of the rectangle is 62 cm.

b. Work out the length of the rectangle

Q3. Simplify the following :

1)  $10x + 36 - 38x - 47$

4)  $-2(7 - n) + 4$

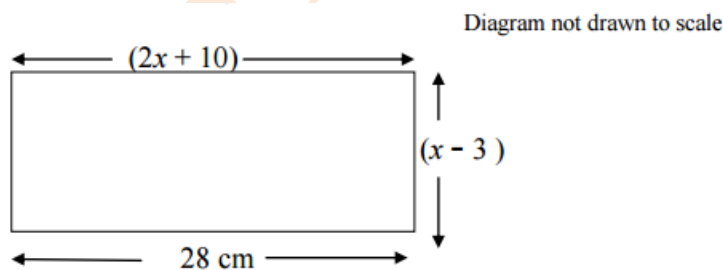
2)  $-8(-5b + 7) + 5b$

5)  $-4p - (1 - 16p)$

3)  $4 - 5(-4n + 3)$

6)  $-7(k - 8) + 2k$

Q4. The diagram below is a rectangle. All measurements are in centimeters.



a. Work out the value of  $x$ .

b. Hence, work out the perimeter and area of the rectangle.

Q5. Simplify the expression by combining the like terms.

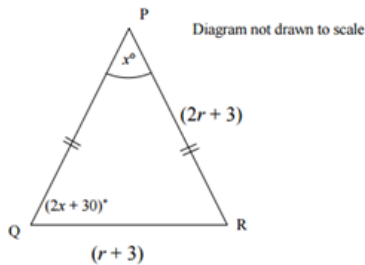
$$7x^3 - 3x^2y + x^2y + xy^2 - y^3$$

Q6. PQR is an isosceles triangle with  $PQ = PR$ , and angle  $QPR = X^\circ$

$$\text{Angle PQR} = (2X + 30)^\circ$$

$$\text{PR} = (2r + 3) \text{ cm}$$

$$\text{QR} = (r + 3) \text{ cm}$$

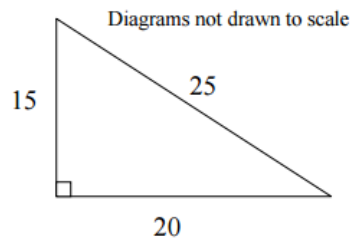
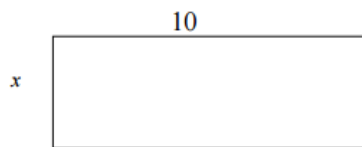


- Find an expression for the perimeter of the triangle in terms of  $r$ , giving your answer in its simplest form.
- Work out the value of  $r$ , if the perimeter is 49 cm.
- Work out the value of  $x$ .

Q7. Find the value of the following expressions at  $a = 1$  and  $b = -2$ :

- $a^2 + b^2 + 3ab$
- $a^2 + a^2b + ab^2 + b^3$

Q8. The area of the right-angled triangle is equal to the area of the rectangle. Work out the value of  $x$ . All measurements are in centimeters.



Q9. Add:

- $3mn, -5mn, 8mn, -4mn$
- $t - 8tz, 3tz - z, z - t$
- $-7mn + 5, 12mn + 2, 9mn - 8, -2mn - 3$
- $a + b - 3, b - a + 3, a - b + 3$
- $14x + 10y - 12xy - 13, 18 - 7x - 10y + 8xy, 4xy$

Q10. What should be taken away from  $3x^2 - 4y^2 + 5xy + 20$  to obtain  $-x^2 - y^2 + 6xy + 20$ ?

- Q11. a. From the sum of  $3x - y + 11$  and  $-y - 11$ , subtract  $3x - y - 11$ .  
b. From the sum of  $4 + 3x$  and  $5 - 4x + 2x^2$ , subtract the sum of  $3x^2 - 5x$  and  $-x^2 + 2x + 5$ .
- Q12. If  $m = 2$ , find value of:  
(i)  $m - 2$   
(ii)  $3m - 5$   
(iii)  $9 - 5m$   
(iv)  $3m^2 - 2m - 7$   
(v)  $\frac{5m}{2} - 4$
- Q13. If  $p = -2$ , find the value of:  
(i)  $4p + 7$   
(ii)  $-3p^2 + 4p + 7$   
(iii)  $-2p^3 - 3p^2 + 4p + 7$
- Q14. If  $a = 2, b = -2$ , find the value of:  
(i)  $a^2 + b^2$   
(ii)  $a^2 + ab + b^2$   
(iii)  $a^2 - b^2$
- Q15. When  $a = 0, b = -1$ , find the value of the given expressions:  
(i)  $2a + 2b$   
(ii)  $2a^2 + b^2 + 1$   
(iii)  $2a^2b + 2ab^2 + ab$   
(iv)  $a^2 + ab + 2$
- Q16. Simplify the expression and find the value if  $x$  is equal to 2  
(i)  $x + 7 + 4(x - 5)$   
(ii)  $3(x + 2) + 5x - 7$   
(iii)  $6x + 5(x - 2)$   
(iv)  $4(2x - 1) + 3x + 11$

Q17. Solve

- (i) If  $Z = 10$ , find the value of  $Z^3 - 3(Z - 10)$ .  
 (ii) If  $p = -10$ , find the value of  $p^2 - 2p - 100$

Q18. What should be the value of  $a$  if the value of  $2x^2 + x - a$  equals to 5, when  $x = 0$ ?

Q19. Simplify the expression and find its value when  $a = 5$  and  $b = -3$ .  $2(a^2 + ab) + 3 - ab$

Q20. Use the given algebraic expression to complete the table of number patterns.

S. No.	Expression	Terms									
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	...	10 <sup>th</sup>	...	100 <sup>th</sup>	...
(i)	$2n - 1$	1	3	5	7	9	-	19	-	-	-
(ii)	$3n + 2$	2	5	8	11	-	-	-	-	-	-
(iii)	$4n + 1$	5	9	13	17	-	-	-	-	-	-
(iv)	$7n + 20$	27	34	41	48	-	-	-	-	-	-
(v)	$n^2 + 1$	2	5	10	17	-	-	-	-	10, 001	-