

## Unit 1 – Tools of Algebra Test

Choose the most suitable choice: (Q1 - Q5)

1.  $x + 5 = 5 + x$  is an example of which property?

- a) associative property of addition
- b) additive identity
- c) commutative property of addition
- d) additive inverse

2. The subtraction of 10 times of  $x$  from  $y$  is

- a)  $5x - y$
- b)  $y - 10x$
- c)  $5x - y$
- d)  $5 + 10y$

3.  $(150) + (50 + 25) = (150 + 50) + 25$

- a) associative property of addition
- b) distributive property
- c) commutative property of multiplication
- d) multiplicative inverse property

4.  $\left(\frac{x}{x}\right)^n = \dots\dots\dots$

- a)  $x^{mn}$
- b)  $x^{m+n}$
- c)  $x^{m-n}$
- d) 1

5. An algebraic expression containing three terms is called:

- a) monomial
- b) trinomial
- c) binomial
- d) None of these

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Solve the following:

6.  $x \frac{(3x^2 - xz)}{3xz - z^2}$

7.  $2 - \frac{y}{4} = \frac{y}{4} + 1$

8.  $-(k - 5) + 3(k + 2) = 4(k - 3) - 1$

9. Mr. X's father is 4 times as old as Mr. X. After 5 years, father will be three times as old as X. Find their present ages.

10. The velocity of an object fired directly upward is given by  $V = 80 - 32t$ , where  $t$  is in seconds.

**Fill in the blanks**

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11. If two events (A,B) are mutually exclusive, the probability of event A or event B occurring is given by \_\_\_\_\_.
12.  $P(A)$  is expressed as \_\_\_\_\_.
13. The solution to the equation  $\frac{3x}{5} - \frac{x}{2} = 4$  is \_\_\_\_\_.
14. The multiplicative inverse of  $\frac{-27}{9}$  is \_\_\_\_\_.
15. The two general types of random variables are \_\_\_\_\_ and \_\_\_\_\_.

**Choose as True or False.**

16. Probability of an even number on top in rolling a die is  $\frac{1}{2}$ . (T/F)
17.  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$  when A and B are overlapping. (T/F)
18. The multiplicative inverse of  $\frac{-25}{5}$  is  $\frac{8}{5}$ . (T/F)
19. The simplified form of  $2x \times \frac{(5y-y)}{2}$  is  $4xy$ . (T/F)
20. The associative property addition says that it doesn't matter how we group the added numbers (i.e. which we calculate first)  
 $(a + b) + c = a + (b + c)$  (T/F)

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### Answers:

#### Choose the most suitable choice: (Q1-Q5)

- $x + 5 = 5 + x$  is an example of which property?
  - associative property of addition
  - additive identity
  - commutative property of addition
  - additive inverse
- The subtraction of 10 times of  $x$  from  $y$  is
  - $5x - y$
  - $y - 10x$
  - $5x - y$
  - $5 + 10y$
- $(150) + (50 + 25) = (150 + 50) + 25$ 
  - associative property of addition
  - distributive property
  - commutative property of multiplication
  - multiplicative inverse property
- $\left(\frac{x}{x}\right)^n = \dots\dots\dots$ 
  - $x^{mn}$
  - $x^{m+n}$
  - $x^{m-n}$
  - 1
- An algebraic expression containing three terms is called:
  - monomial
  - trinomial
  - binomial
  - None of these

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Solve the following:

$$\begin{aligned} 6. \quad & x \frac{(3x^2 - xz)}{3xz - z^2} \\ & = x \frac{(3x^2 - xz)}{z(3x - z)} \\ & = x \frac{x(3x - z)}{z(3x - z)} \\ & = x \cdot \frac{x}{z} \\ & = \frac{x^2}{z} \end{aligned}$$

$$\begin{aligned} 7. \quad & 2 - \frac{y}{4} = \frac{y}{4} + 1 \\ & 2 - 1 = \frac{y}{4} + \frac{y}{4} \\ & 1 = \frac{2y}{4} \\ & 4 = 2y \\ & y = 2 \end{aligned}$$

$$\begin{aligned} 8. \quad & -(k - 5) + 3(k + 2) = 4(k - 3) - 1 \\ & -k + 5 + 3k + 6 = 4k - 12 - 1 \\ & 2k + 11 = 4k - 13 \\ & 24 = 2k \\ & k = 12 \end{aligned}$$

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9. Mr. X's father is 4 times as old as Mr. X. After 5 years, father will be three times as old as X. Find their present ages.

Let X's age be  $z$  years.

Then X's father's age =  $4z$

After 5 years, X's age =  $z + 5$

Father's age =  $4z + 5$

According to the question,

$$4z + 5 = 3(z + 5)$$

$$4z + 5 = 3z + 15$$

$$4z - 3z = 15 - 5$$

$$z = 10$$

$$4z = 4 \times 10 = 40$$

10. The velocity of an object fired directly upward is given by  $V = 80 - 32t$ , where  $t$  is in seconds.

When will the velocity be between 32 and 64 feet per second?

$$32 < 80 - 32t < 64$$

$$32 - 80 < 80 - 80 - 32t < 64 - 80$$

$$-48 < -32t < -16$$

$$\frac{-48}{-32} > \frac{-32t}{-32} > \frac{-16}{-32}$$

$$1.5 > t > 0.5$$

**Fill in the blanks**

11. If two events (A,B) are mutually exclusive, the probability of event A or event B occurring is given by  $P(A \text{ or } B) = P(A) + P(B)$ .

12. P(A) is expressed as  $\frac{n(A)}{n(S)}$ .

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13. The solution to the equation  $\frac{3x}{5} - \frac{x}{2} = 4$  is 40.
14. The multiplicative inverse of  $\frac{-27}{9}$  is  $-\frac{1}{3}$ .
15. The two general types of random variables are discrete and continuous.

**Choose as True or False.**

16. Probability of an even number on top in rolling a die is  $\frac{1}{2}$ . (T/F)
17.  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$  when A and B are overlapping. (T/F)
18. The multiplicative inverse of  $\frac{-25}{5}$  is  $\frac{8}{5}$ . (T/F)
19. The simplified form of  $2x \times \frac{(5y-y)}{2}$  is  $4xy$ . (T/F)
20. The associative property of addition says that it doesn't matter how we group the added numbers (i.e. which we calculate first)  
 $(a + b) + c = a + (b + c)$  (T/F)