Unit 1 - Tools of Algebra Test Review Guide

1. **$x + 8 = 8 + x$ is an example of which property?**

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

2. **$2(x + 5) = 2x + 10$ is an example of which property?**

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

3. **$54321 \cdot 1 = 54321$ is an example of which property?**

   a) associative property of multiplication
   b) distributive property
   c) commutative property of multiplication
   d) multiplicative identity property

4. **$(150)+(50+25)=(150+50)+25$ is an example of which property?**

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

5. **$-45\left(-\dfrac{1}{45}\right) = 1$ is an examples of which property?**

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

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6. **Which of these values $(-2, -1, 0, 1, 2)$ makes this equation true?**

$$x^2 - 4 = 0$$

7. **Which of these values $(-3, -1, 0, 1, 4)$ makes this equation true?**

$$x^2 - 12 = 0$$

Simplify the equations (Q8-Q10)

8. $\dfrac{2(7x - 14)}{7} = 7$

9. $-(n - 5) + 3(n + 2) = 4(n - 3) - 1$

10. $15x + 55 = 12$

11. $(2x - 3y + 4z) + (9x - 8y + 7z)$

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12. **The solution to the equation 3(x + 2) = 2(2x + 2) is**

    a. 4   c. 3

    b. 2   d. 0

13. $2 - \dfrac{x}{4} = \dfrac{x}{4} + 1$

13. **Mr. Alison has \$5 in his bank. How much money does he need to buy a pencil packet that costs \$78.**

14. **When you got your car fixed, the cost for parts was \$75. The cost for labor was \$45 per hour. If the total cost was \$255. Find the number of hours.**

15. **The length of a rectangle is twice its breadth. If the perimeter is 72 meter, find the length and breadth of the rectangle.**
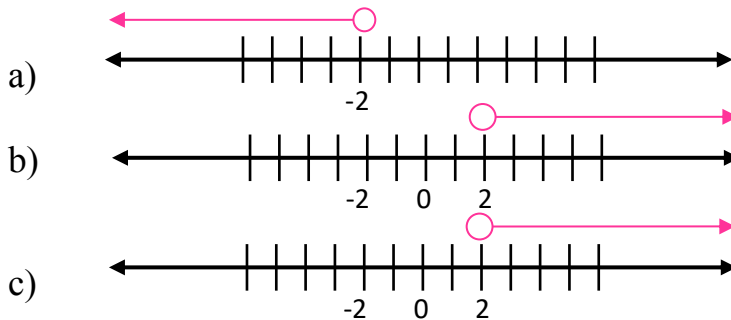
16. **Robert's father is 4 times as old as Robert. After 5 years, father will be three times as old as Robert. Find their present ages.**

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17. **Five less than one-half a number is greater than 12.**

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

19. **Which of the following is the graph of: $x < -2$**

a)

b)

c)

20. **Solve $2 \times |3x - 1| = 16$**

21. **An algebraic expression containing two terms is called:**

a) monomial

c) binomial

b) trinomial

d) None of these

22. **The subtraction of 10 times of x from y is**

a) $5x - y$

c) $5x - y$

b) $y - 10x$

d) $5 + 10y$

23. $\left(\dfrac{a}{m}\right)^n = \ldots\ldots\ldots\ldots\ldots$

a) a^{mn}

c) $(am)^n$

b) $(a - m)^n$

d) $\dfrac{a^n}{m^n}$

24. **Solve** $\dfrac{3|x-3|}{2} \leq 5$

25. $\left|\dfrac{1}{2}x + 7\right| \geq 5$

26. **Let the 3 consecutive even numbers are x, x+2 and x+4.**

27. **A die is rolled find the probability that an even number is obtained.**

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28. **P(A)=…………………………..**

a. $\dfrac{\text{The number of ways event can accour}}{\text{the total number of possible outcomes}}$

b. $\dfrac{\text{The number of ways event can accour}}{\text{the total number of possible events}}$

c. $\dfrac{\text{The number of sample points}}{\text{the total number of possible outcomes}}$

d. $\dfrac{\text{The number of ways event repeated regularly}}{\text{the total number of possible outcomes}}$

29. **If two events (A,B) are mutually exclusive, the probability of event A or event B occurring is given by _____.**

a. P(A or B) = P(A) + P(B)   c. P(A or B) = P(A) - P(B)

b. P(A or B) = P(A+B)   d. P(A or B) = P(B) + P(B)

30. **The two general types of random variables are _____ and _____.**

a) Similar, continuous   c) Discrete, continuous

b) Discrete, uniform   d) Discrete, discontinuous

31. **The probability of an event is always less than 1 / in the range from 0 to 1**

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Answers

1. $x + 8 = 8 + x$ **is an example of which property?**

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

2. $2(x + 5) = 2x + 10$ **is an example of which property?**

    a) associative property of multiplication
    b) distributive property
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3. **54321•1 = 54321 is an example of which property?**

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    b) distributive property
    c) commutative property of multiplication
    d) multiplicative identity property

4. **(150)+(50+25)=(150+50)+25 is an example of which property?**

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    b) distributive property
    c) commutative property of multiplication
    d) multiplicative inverse property

5. $-45\left(-\frac{1}{45}\right) = 1$ **is an example of which property?**

    a) associative property of multiplication
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    c) commutative property of multiplication
    d) multiplicative inverse property

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6. **Which of these values $(-2, -1, 0, 1, 2)$ makes this equation true?**

$$x^2 - 4 = 0$$

x	$x^2 - 4$	Simplified
−2	$(-2)^2 - 4$	$=4 - 4 = 0$
−1	$(-1)^2 - 4$	$=1 - 4 = -3$
0	$(0)^2 - 4$	$=0 - 4 = -4$
1	$(1)^2 - 4$	$=1 - 4 = -3$
2	$(2)^2 - 4$	$=4 - 4 = 0$

7. **Which of these values $(-3, -1, 0, 1, 4)$ makes this equation true?**

$$x^2 - 12 = 0$$

x	$x^2 - 16$	Simplified
−3	$(-3)^2 - 16$	$= 9 - 16 = -7$
−1	$(-1)^2 - 16$	$= 1 - 16 = -15$
0	$(0)^2 - 16$	$= 0 - 16 = -16$
1	$(1)^2 - 16$	$= 1 - 16 = -15$
4	$(4)^2 - 16$	$=16 - 16=0$

8. **Simplify the equations (Q8-Q10)**

$$\frac{2(7x - 14)}{7} = 7$$

14x – 28 = 49
14x = 77
x = 5.5

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9. $-(n - 5) + 3(n + 2) = 4(n - 3) - 1$

$-n + 5 + 3n + 6 = 4n - 12 - 1$

$2n + 11 = 4n - 13$

$24 = 2n$

$n = 12$

10. $15x + 55 = 12$

$15x = 12 - 55$

$15x = -43$

$x = -43/15$

11. $(2x - 3y + 4z) + (9x - 8y + 7z)$

$= 2x + 9x - 3y - 8y + 4z + 7z$

$= 11x - 11y + 11z$

12. **The solution to the equation 3(x + 2) = 2(2x + 2) is**

a. 4
b. 2
c. 3
d. 0

12. $2 - \dfrac{x}{4} = \dfrac{x}{4} + 1$

$2 - 1 = \dfrac{x}{4} + \dfrac{x}{4}$

$1 = \dfrac{2x}{4}$

$4 = 2x$

$x = 2$

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13.   **Mr. Alison has \$5 in his bank. How much money does he need to buy a pencil packet that costs \$78.**

Let x be the amount of money Mr. Alison needs. Then the equation can be written as:

$$5 + x = 78$$

$$x = 78 - 5$$

$$x = 73$$

14.   **When you got your car fixed, the cost for parts was \$75. The cost for labor was \$45 per hour. If the total cost was \$255. Find the number of hours.**

45x + 75 = 255
45x = 180
x = 4 hours

15.   **The length of a rectangle is twice its breadth. If the perimeter is 72 meters, find the length and breadth of the rectangle.**

Assume that the width is x.
The length is 2x
2 (2x + x) = 72
6x = 72
x = 12
Length = 24.
Width = 12.

16.   **Robert's father is 4 times as old as Robert. After 5 years, father will be three times as old as Robert. Find their present ages.**

Let Robert's age be x years.   4x + 5 = 3(x + 5)
Then Robert's father's age = 4x   4x + 5 = 3x + 15
After 5 years, Robert's age = x + 5   4x − 3x = 15 − 5
Father's age = 4x + 5   x = 10
According to the question,   4x = 4 × 10 = 40

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17. **Five less than one-half a number is greater than 12. Find the number.**

Let the unknown number be x.
one-half that number will be ½ x
five less than ½ x will be ½ x -5
½ x - 5 is greater than 12
so the result is ½ x - 5 > 12

$$\frac{1}{2}x > 17$$

$$x > 34$$

18. **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?

$32 < 80 - 32t < 64$

$32 - 80 < 80 - 80 - 32t < 64 - 80$
$-48 < -32t < -16$

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

$1.5 > t > 0.5$

19. **Which of the following is the graph of: $x < -2$**

a)

b)

c)
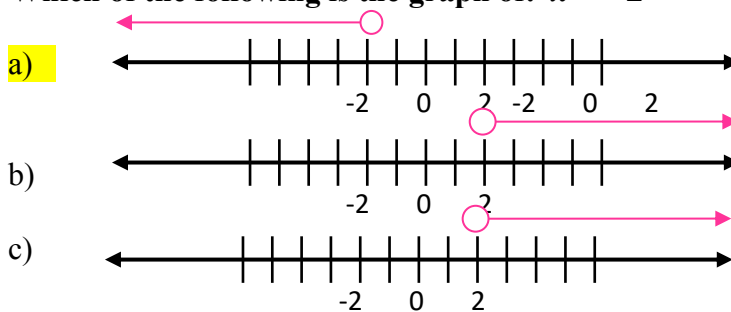
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20. $2\times |3x - 1| = 16$

$|3x - 1| = 8$

Case 1	Case 2
$3x - 1 = 8$	$3x - 1 = -8$
$3x = 9$	$3x = -7$
$x = 3$	$x = -\frac{7}{3}$

Check the two values in the original equation.

Both solutions are true.

21. **An algebraic expression containing two terms is called:**

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

22. **The subtraction of 10 times of x from y is**

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

23. $\left(\frac{a}{m}\right)^n = \dots\dots\dots\dots$

    a) a^{mn}
    b) $(a - m)^n$
    c) $(am)^n$
    d) $\frac{a^n}{m^n}$

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24. **Solve** $\frac{3|x-3|}{2} \leq 5$

$3|x-3| \leq 10$

$|x-3| \leq \frac{10}{3}$

$x - 3 \leq \frac{10}{3}$ and $x - 3 \geq -\frac{10}{3}$

$x \leq \frac{19}{3}$ and $x \geq -\frac{1}{3}$

25. $\left|\frac{1}{2}x + 7\right| \geq 5$

$\frac{1}{2}x + 7 \geq 5$ or $\frac{1}{2}x + 7 \leq -5$

$\frac{1}{2}x \geq -2$ or $\frac{1}{2}x \leq -12$

$x \geq -4$ or $x \leq -24$

26. **The sum of 3 consecutive even numbers is 78. Find the numbers.**

Let the 3 consecutive even numbers are x, x+2 and x+4.
Therefore,
x + (x + 2) + (x + 4) = 78
Or 3x + 6 = 78
Or 3x = 78 – 6 = 72
Or x = 24 (Divide both sides by 3)
So the three numbers are 24, 26, 18.

27. **A die is rolled find the probability that an even number is obtained.**

The sample space S is

S={1,2,3,4,5,6}

Let E be an event of even number

E={2,4,6}

The probability is

P(E)=$\frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$

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28. **P(A)=…………………………..**

a. $\dfrac{\text{The number of ways event can accour}}{\text{the total number of possible outcomes}}$

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29. **If two events (A,B) are mutually exclusive, the probability of event A or event B occurring is given by _____.**

a. P(A or B) = P(A) + P(B)
b. P(A or B) = P(A+B)
c. P(A or B) = P(A) - P(B)
d. P(A or B) = P(B) + P(B)

30. **The two general types of random variables are _____ and _____.**

a) Similar, continuous

b) Discrete, uniform

c) Discrete, continuous

d) Discrete, discontinuous

31. **Circle the Correct Answer:**
The probability of an event is always (*less than 1 or* *in the range from 0 to 1*).