Absolute Value and Distance

Distance meaning, absolute-value equations, and interval interpretation.

Name _____ Date _____

32 main 2-up grid 2 pages

Completion Reward

Shown here as a small pack artifact, not a preview destination.

1. Evaluate |-7|. Answer with a number.

2. Evaluate |12|. Answer with a number.

3. What is -|-6| equal to?

A. 6
B. 0
C. -6
D. -12

4. Which statement is true?

A. |3 - 8| = |8 - 3|
B. |3 - 8| = -|8 - 3|
C. |3 - 8| = 3
D. |8 - 3| = -5

5. How many real solutions does |x + 1| = -3 have?

A. One real solution
B. No real solutions
C. Two real solutions
D. Infinitely many real solutions

6. What does |x| = 4 mean?

A. x is 4 units from 0
B. x is greater than 4
C. x must equal 4 only
D. x is 4 units from 4

7. Which equation has no solution?

A. |x| = 2
B. |x| = -2
C. |x - 1| = 4
D. |2x| = 8

8. Which statement is always true?

A. |-x| = -|x|
B. |x| = x for every x
C. |x| = -x for every x
D. |-x| = |x|

9. How far is -8 from 3 on the number line? Answer with a number.

10. Which expression represents the distance between x and 4?

A. x - 4
B. |4| - x
C. |x - 4|
D. x + 4

11. A student says |-5| = -5. What is the mistake?

A. They should square -5 first.
B. Absolute value is always nonnegative because it represents distance.
C. They should change -5 into 5 only when x is positive.
D. Absolute value means opposite, not distance.

12. Evaluate |4 - 11| + 2. Answer with a number.

13. Solve |x| = 9.

A. x = 9 only
B. x = -9 only
C. No solution
D. x = -9 or x = 9

14. Which equation says x is 6 units from 1?

A. |x - 1| = 6
B. |x + 1| = 6
C. |x - 6| = 1
D. |x| = 7

15. Which inequality describes numbers within 2 units of 5?

A. |x + 5| <= 2
B. |x - 5| <= 2
C. |x - 2| <= 5
D. |x| > 7

16. Which pair is 5 units from 2 on the number line?

A. -3 and 7
B. -7 and 3
C. 5 and 7
D. -3 and 5

17. What does |x| < 4 mean on the number line?

A. x is to the left of -4 or to the right of 4.
B. x is greater than 4 only.
C. x is exactly -4 or 4.
D. x is between -4 and 4.

18. What is the best next step to solve |2x| = 10?

A. Subtract 10 from both sides.
B. Square both sides immediately.
C. Divide both sides by 2 to get |x| = 5.
D. Make the answer x = 5 only.

19. What is the best next step to solve 3|x - 1| = 12?

A. Add 1 to both sides.
B. Make x - 1 equal to 12 and -12 immediately.
C. Square both sides.
D. Divide both sides by 3.

20. What is the best next step to solve |x - 5| = 9?

A. Subtract 9 from both sides.
B. Square both sides immediately.
C. Write x - 5 = 9 or x - 5 = -9.
D. Make the answer x = 14 only.

21. A student solves |x| = 6 by writing x = 6 only. What did they miss?

A. They should square both sides first.
B. They forgot the negative solution x = -6.
C. They should make the answer x = 0.
D. There is no missing solution.

22. **A student solves |x - 3| = 5 and writes x = 8. What is missing?**

A. The second solution x = 2 is missing.
B. The second solution x = -2 is missing.
C. There is no second solution because absolute value is positive.
D. The answer should be x = 15.

23. **Solve |x + 2| = 5. Answer with all solution values of x.**

24. **Solve |x| < 4. Answer as an inequality in x.**

25. **Solve |x| > 3. Answer as an inequality in x.**

26. **Solve |x - 2| < 1. Answer as an inequality in x.**

27. **Solve |x + 1| > 4. Answer as an inequality in x.**

28. **Solve |x - 6| = 2. Answer with all solution values of x.**

29. **Solve |x - 4| = 3.**

A. x = 3 or x = 4
B. x = 1 or x = 7
C. x = -1 or x = 7
D. x = 4 or x = 3

30. **Solve |x + 2| = 8.**

A. x = 10 or x = -6
B. x = 8 or x = -2
C. x = 6 or x = -10
D. x = 6 only

31. **Which student work correctly solves |x - 3| = 2?**

A. Student B: x - 3 = 2 only, so x = 5.
B. Student C: |x| = 5, so x = 5 only.
C. Student D: x = -3 or x = 2.
D. Student A: x - 3 = 2 or x - 3 = -2, so x = 5 or x = 1.

32. **Solve |2x - 4| = 10. Answer with all solution values of x.**