SKILL 9: Order of Operations

To make sure everyone gets the same result when calculating the value of an expression, mathematicians use a set of rules known as the **order of operations**.

Order of Operations

1. Multiply and divide in order from left to right.

2. Add and subtract in order from left to right.

Example 1

Simplify: $20 + 3 \cdot (-4)$.

Follow the order of operations.

$20 + 3 \cdot (-4)$ Multiply first.

$\downarrow$

$20 + (-12) = 8$ Add.

So, $20 + 3 \cdot (-4) = 8$.

Example 2

Simplify: $-48 \div 8 - 10 \cdot 9$.

Follow the order of operations.

$-48 \div 8 - 10 \cdot 9$ Divide: $-48 \div 8$. Multiply: $10 \cdot 9$.

$\downarrow$ $\downarrow$

$-6 \quad - \quad 90 = -96$ Subtract.

So, $-48 \div 8 - 10 \cdot 9 = -96$.

Guided Practice

Simplify by completing each step.

1. Simplify: $72 \div 9 \cdot 4 + 5$.

   $= \underline{\qquad} \cdot 4 + 5$

   $= \underline{\qquad} + 5$

   $= \underline{\qquad}$

2. Simplify: $7 + (-3) \cdot 2 - 8 \div 4$.

   $= 7 + (\underline{\qquad}) - 8 \div 4$

   $= 7 + (\underline{\qquad}) - \underline{\qquad}$

   $= \underline{\qquad} - \underline{\qquad}$

   $= \underline{\qquad}$

SKILL 9: Practice

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Simplify.

1. $9 + 2 \cdot 3 =$ _____

2. $8 + 4 \cdot (-2) =$ _____

3. $7 - 24 \div 8 =$ _____

4. $20 \div 2 - 24 \div 3 =$ _____ .

5. $5 \cdot 3 + 5 \cdot 2 =$ _____

6. $15 - 30 \div 5 =$ _____

7. $9 + 3 \cdot 6 - 4 =$ _____

8. $-4 + 6 \cdot 7 =$ _____

9. $10 - 3 \cdot 5 =$ _____

10. $12 - 3 \cdot 2 + 30 =$ _____

11. $-8 \div 16 \div (-4) =$ _____

12. $10 - 18 \div (-2) + 4 =$ _____

13. $17 - 9 \cdot 3 =$ _____

14. $1 \div 3 \cdot 2 \cdot 4 =$ _____

15. $8 + 3 \cdot 4 + 10 \div 5 =$ _____

16. $25 + 3 \cdot 6 \div 2 =$ _____

17. $3 \cdot 2 - 16 =$ _____

18. $1 - 8 \div 4 \div 2 =$ _____

19. $3 + (-4) \cdot 6 =$ _____

20. $6 - 8 \div 2 - 10 =$ _____

21. $-2 + (-3) \cdot (-1) =$ _____

22. $12 + 14 \div 7 =$ _____

23. $19 + - 3 \cdot 4 - 2 \cdot 3 =$ _____

24. $20 \div 2 - 24 \div 3 =$ _____

Solve.

25. The temperature was 78°F at 3 P.M. Each hour for the next 4 hours, the temperature decreased by 3°F. What was the temperature at 7 P.M.? _____

26. Max had a score of −700 points in a video game. On each of the next 3 plays, he gained 400 points. Then what was his score? _____

TEST PREP

27. Simplify: $8 + 16 \div (-2)$.

    Skill 9

    A 16   C 0

    B 12   D −12

28. Add: $23 + (-9)$.

    Skill 4

    F −14   H 24

    G 14   J 32

Section B: Expressions and Equations