

EXAMPLE 2 Using Order of Operations with Exponents

Study Tip

Remember to multiply and divide from left to right. In Example 2, you should divide before multiplying because the division symbol comes first when reading from left to right.

Evaluate $30 \div (7 + 2^3) \times 6$.

Evaluate the power in parentheses first.

$$\begin{aligned} 30 \div (7 + 2^3) \times 6 &= 30 \div (7 + 8) \times 6 \\ &= 30 \div 15 \times 6 \\ &= 2 \times 6 \\ &= 12 \end{aligned}$$

Evaluate 2^3 .

Perform operation in parentheses.

Divide 30 by 15.

Multiply 2 and 6.

On Your Own

Evaluate the expression.

1. $7 \cdot 5 + 3$

$$\begin{array}{r} \checkmark \\ 35 + 3 \\ \checkmark \\ \textcircled{38} \end{array}$$

2. $(28 - 20) \div 4$

$$\begin{array}{r} \checkmark \\ 8 \div 4 \\ \textcircled{2} \end{array}$$

3. $6 \times 15 - 10 \div 2$

$$\begin{array}{r} \checkmark \\ 90 - 10 \div 2 \\ \checkmark \\ 90 - 5 \\ \textcircled{85} \end{array}$$

- (1) P
(2) E
(3) MD
(4) AS

4. $6 + 2^4 - 1$

$$\begin{array}{r} 6 + 16 - 1 \\ 22 - 1 \\ \textcircled{21} \end{array}$$

5. $4 \cdot 3^2 + 18 - 9$

$$\begin{array}{r} 4 \cdot 9 + 18 - 9 \\ \checkmark \\ 36 + 18 - 9 \\ 54 - 9 \\ \textcircled{45} \end{array}$$

6. $16 + (5^2 - 7) \div 3$

$$\begin{array}{r} 16 + (25 - 7) \div 3 \\ \checkmark \\ 16 + 18 \div 3 \\ \checkmark \\ 16 + 6 \\ \textcircled{22} \end{array}$$

$$\begin{array}{r} 36 \\ + 18 \\ \hline 54 \\ - 25 \\ \hline 29 \end{array}$$

IMPORTANT NEWS!!

The symbols \times and \cdot are used to indicate multiplication. You can also use parentheses to indicate multiplication. For example, $3(2 + 7)$ is the same as $3 \times (2 + 7)$.



Practice and Problem Solving

Find the value of the expression.

3. $(4 \times 15) - 3$

4. $10 - (7 + 1)$

5. $18 \div (6 + 3)$

Evaluate the expression.

1 2 6. $5 + 18 \div 6$

7. $(11 - 3) \div 2 + 1$

8. $45 \div 9 \times 12$

9. $6^2 - 3 \cdot 4$

10. $42 \div (15 - 2^3)$

11. $4^2 \cdot 2 + 8 \cdot 7$

12. $3^2 + 12 \div (6 - 3) \times 8$

13. $(10 + 4) \div (26 - 19)$

14. $(5^2 - 4) \cdot 2 - 18$

ERROR ANALYSIS Describe and correct the error in evaluating the expression.

15.

X $9 + 2 \times 3 = 11 \times 3$
 $= 33$

16.

X $19 - 6 + 12 = 19 - 18$
 $= 1$

17. **POETRY** You need to read 20 poems in 5 days for an English project. Each poem is 2 pages long. Evaluate the expression $20 \times 2 \div 5$ to find how many pages you need to read each day.