### Practice B

#### 2-1 Variables and Expressions

Evaluate each expression to find the missing values in the tables.

1. \[
\begin{array}{c|c}
 n & n + 8 \\
\hline
 7 & 15 \\
 9 & 18 \\
 22 & 30 \\
 35 & 43 \\
\end{array}
\]

2. \[
\begin{array}{c|c}
 n & 25 - n \\
\hline
 20 & 5 \\
 5 & 20 \\
 18 & 37 \\
 9 & 16 \\
\end{array}
\]

3. \[
\begin{array}{c|c}
 n & n \cdot 7 \\
\hline
 8 & 56 \\
 9 & 63 \\
 11 & 77 \\
 12 & 84 \\
\end{array}
\]

4. \[
\begin{array}{c|c}
 n & 24 \div n \\
\hline
 2 & 12 \\
 6 & 4 \\
 4 & 6 \\
 8 & 3 \\
\end{array}
\]

#### Find an expression for each table.

5. \[
\begin{array}{c|c}
 n & \\
\hline
 35 & 50 \\
 5 & 20 \\
 20 & 35 \\
 85 & 100 \\
\end{array}
\]

6. \[
\begin{array}{c|c}
 n & \\
\hline
 13 & 26 \\
 9 & 18 \\
 30 & 60 \\
 25 & 50 \\
\end{array}
\]

7. A car is traveling at a speed of 55 miles per hour. You want to write an algebraic expression to show how far the car will travel in a certain number of hours. What will be your constant? your variable?

8. Shawn evaluated the algebraic expression \(x \div 4\) for \(x = 12\) and gave an answer of 8. What was his error? What is the correct answer?
A mathematical phrase that contains at least one variable is an expression. A constant is an amount that does not change.

To find the value of a variable, you solve the equation. The solution is the value of the variable.

Find an expression for each table.

Evaluate each expression for the missing values in the tables.

1. \( \begin{array}{c|c|c} \hline n & n + 8 & 7 & 15 \rule{0pt}{1.25cm} \\ \hline 9 & 17 \rule{0pt}{1.25cm} \\ \hline 22 & 30 \rule{0pt}{1.25cm} \\ \hline 35 & 43 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

2. \( \begin{array}{c|c|c} \hline n & 25 - n & 20 & 5 \rule{0pt}{1.25cm} \\ \hline 5 & 20 \rule{0pt}{1.25cm} \\ \hline 18 & 7 \rule{0pt}{1.25cm} \\ \hline 9 & 16 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

3. \( \begin{array}{c|c|c} \hline n & n + 7 & 8 & 56 \rule{0pt}{1.25cm} \\ \hline 9 & 63 \rule{0pt}{1.25cm} \\ \hline 11 & 77 \rule{0pt}{1.25cm} \\ \hline 12 & 84 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

4. \( \begin{array}{c|c|c} \hline n & 24 + n & 2 & 12 \rule{0pt}{1.25cm} \\ \hline 6 & 4 \rule{0pt}{1.25cm} \\ \hline 4 & 6 \rule{0pt}{1.25cm} \\ \hline 8 & 3 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

Find an expression for each table.

5. \( \begin{array}{c|c|c} \hline n & n + 15 & 35 & 50 \rule{0pt}{1.25cm} \\ \hline 5 & 20 \rule{0pt}{1.25cm} \\ \hline 20 & 35 \rule{0pt}{1.25cm} \\ \hline 85 & 100 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

6. \( \begin{array}{c|c|c} \hline n & n + 2 & 13 & 26 \rule{0pt}{1.25cm} \\ \hline 9 & 18 \rule{0pt}{1.25cm} \\ \hline 30 & 60 \rule{0pt}{1.25cm} \\ \hline 25 & 50 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

7. A car is traveling at a speed of 55 miles per hour. You want to write an algebraic expression to show how far the car will travel in a certain number of hours. What will be your constant? your variable?

55 will be the constant, and the number of hours will be the variable.

He used subtraction instead of division. The correct answer is 3.

8. Shawn evaluated the algebraic expression \( x + 4 \) for \( x = 12 \) and gave an answer of 8. What was his error? What is the correct answer?

Evaluate each expression for the given value of the variable.

9. \( 5x + 2 \) for \( x = 4 \)

10. \( 63 - 8z \) for \( z = 7 \)

11. \( 7 + 6p \) for \( p = 2 \)

12. \( 84 - 11y \) for \( y = 4 \)

13. \( 19w \) for \( w = 5 \)

14. \( 98 - 5q \) for \( q = 7 \)

15. \( 14 + n^2 \) for \( n = 3 \)

16. \( x + x + x \) for \( x = 15 \)

17. \( 16 + n^2 \) for \( n = 3 \)

18. \( 16 \) for \( x + 18 \)

Express Trains

Use the expression written on the side of each train’s engine to find the missing values for the cars it pulls. Then choose your own value for the variable to fill in the last caboose on each train.

1. \( \begin{array}{c|c|c|c|c} \hline \text{Train} & \text{Car 1} & \text{Car 2} & \text{Car 3} & \text{Car 4} \\ \hline n + 7 & n = 42 & n = 56 & n = 28 \rule{0pt}{1.25cm} \\ \hline 11 & 15 & 6 & 8 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

2. \( \begin{array}{c|c|c|c|c} \hline \text{Train} & \text{Car 1} & \text{Car 2} & \text{Car 3} & \text{Car 4} \\ \hline 11 & 21 & 25 & 15 \rule{0pt}{1.25cm} \\ \hline 2x + 5 & x = 3 & x = 8 & x = 10 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

3. \( \begin{array}{c|c|c|c|c} \hline \text{Train} & \text{Car 1} & \text{Car 2} & \text{Car 3} & \text{Car 4} \\ \hline c + 12 & c = 48 & c = 24 & c = 60 \rule{0pt}{1.25cm} \\ \hline 6 & 4 & 2 & 5 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

4. \( \begin{array}{c|c|c|c|c} \hline \text{Train} & \text{Car 1} & \text{Car 2} & \text{Car 3} & \text{Car 4} \\ \hline 3p - 9 & p = 8 & p = 4 & p = 11 \rule{0pt}{1.25cm} \\ \hline 11 & 46 & 16 & 7 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

5. \( \begin{array}{c|c|c|c|c} \hline \text{Train} & \text{Car 1} & \text{Car 2} & \text{Car 3} & \text{Car 4} \\ \hline 45 & 18 & 81 & 16 \rule{0pt}{1.25cm} \\ \hline 7m + 2 & m = 5 & m = 2 & m = 9 \rule{0pt}{1.25cm} \\ \hline \end{array} \)

Possible answers are given on each caboose. Accept all answers that correctly match the chosen variable and the train’s expression.