

EXPRESSIONS & EQUATIONS

Division as a Fraction

EXAMPLE

Circle the expression below that is equivalent to $18+24\div(6-3)$. Then, evaluate the circled expression.

$$\frac{18+24}{6-3}$$

$$18+\frac{24}{6-3}$$

$$18+\frac{24}{6}-3$$

$$\frac{18+24}{6}-3$$

We can rewrite the division in $18+24\div(6-3)$ as a fraction. Since division comes before addition in the order of operations, only 24 is divided by the grouped quantity $(6-3)$. So, we have numerator 24 and denominator $6-3$.

Therefore, $18+24\div(6-3)$ is equivalent to $18+\frac{24}{6-3}$.

To evaluate, we compute the denominator of the fraction first, then divide, then add:

$$\begin{aligned} 18+\frac{24}{6-3} &= 18+\frac{24}{3} \\ &= 18+8 \\ &= 26. \end{aligned}$$

PRACTICE

Connect each expression on the left with its equivalent expression on the right. Then, evaluate the matched expression on the right.

35. $(30-20)\div(5-3)$

$$30-\frac{20}{5}-3 = \underline{\hspace{2cm}}$$

36. $(30-20)\div 5-3$

$$30-\frac{20}{5-3} = \underline{\hspace{2cm}}$$

37. $30-20\div(5-3)$

$$\frac{30-20}{5-3} = \underline{\hspace{2cm}}$$

38. $30-20\div 5-3$

$$\frac{30-20}{5}-3 = \underline{\hspace{2cm}}$$

EXPRESSIONS & EQUATIONS

Division as a Fraction

Remember, when evaluating expressions, we apply the following **order of operations**:

1. Grouped expressions (numerators, denominators, and expressions inside parentheses or absolute value bars)
2. Exponents
3. Multiplication and division (working from left to right)
4. Addition and subtraction (working from left to right)

PRACTICE

Evaluate each expression below.

39. $\frac{6+3}{3} + 2 =$ _____

40. $5 - \frac{8}{6(4)} =$ _____

41. $3 \cdot \frac{7+9}{2} =$ _____

42. $\frac{3 \cdot 7+9}{2} =$ _____

43. $\frac{-3(4)}{(6-4)^2} =$ _____

44. $\frac{20^2}{2} + \frac{20}{2^2} + \left(\frac{20}{2}\right)^2 =$ _____

45. $17 - 2\left(\frac{1+11}{2 \cdot 3}\right) =$ _____

46. $\frac{6^2}{7+5} \cdot \frac{7-6-5}{2} =$ _____

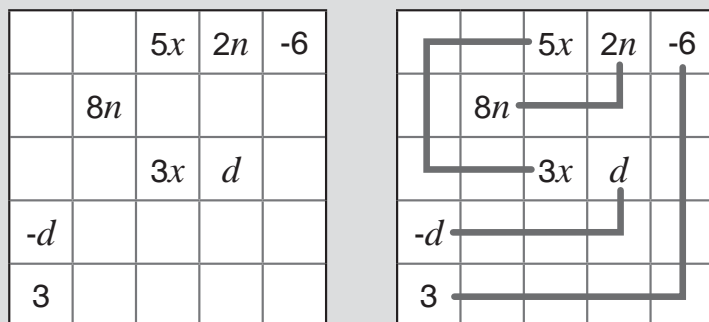
47. $\frac{8(7-3)^2}{-(3-7)^3} =$ _____

48. $\left(\frac{5+7+9}{2^5-5^2}\right)^3 =$ _____

A **term** is a number, a variable, or a product of numbers and variables. Terms with the same variables are called **like terms**. For example, $3x$ and $6x$ are like terms, and $-2y$ and y are like terms. However, $5x$ and $5y$ are not like terms.

Numbers without variables, such as 4 and -7 , are also like terms.

In a **Like Terms Link** puzzle, each pair of like terms is connected by a path, as shown in the solved example below.



Paths may not travel diagonally, cross another path, or pass through a square that contains a term.

Like terms must also have the same exponents.

For example, $4a^2$ and $3a^2$ are like terms, but $4a^2$ and $3a$ are not.



PRACTICE

Solve each Like Terms Link puzzle below. We recommend using a pencil.

Print more Like Terms Link puzzles at BeastAcademy.com.

49.

$12a$			
	$5c$	$6b$	$2a$
	b		$6c$

50.

			$7x$
	-8	$4y$	
		$-3x$	
$8y$			4

51.

	$13t$	$-5r$		
	$-4s$			
$-4r$			$2t$	$-5s$

52.

			$11u$	
	11		$2v$	$-2u$
		w		
			2	
		$2w$	$-9v$	

EXAMPLE | Simplify the expression $4a + 3a$.

We can combine like terms to simplify expressions. $4a = a + a + a + a$, and $3a = a + a + a$. So, we have:

$$\begin{aligned} 4a + 3a &= (a + a + a + a) + (a + a + a) \\ &= a + a + a + a + a + a + a \\ &= 7a. \end{aligned}$$

— or —

We factor a from each term. This gives

$$\begin{aligned} 4a + 3a &= (4 + 3)a \\ &= 7a. \end{aligned}$$



PRACTICE | Simplify each of the following expressions.

53. $5x + 4x =$ _____

54. $10y - 3y =$ _____

55. $3d + 4d + 5d =$ _____

56. $s + 3s + 15s =$ _____

57. $-3w + 12w =$ _____

58. $6p + (-p) =$ _____

59. $8c - 14c + 3c =$ _____

60. $-22g + 36g - 12g =$ _____

61. $12n - 7n - 5n =$ _____

62. $93k + 47k - 92k =$ _____

63. Write a simplified expression for the perimeter of a square with side length s . 63. _____

64. Write a simplified expression for the perimeter of a rectangle with width x and height $3x$. 64. _____