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Multiplication and Division Involving Variables

1. Write an expression using a variable. What does the variable represent?
   a. John is twice as tall as Jim.
   b. The cost of a jar of candies is $8. Mr. Marcus bought a few jars.
   c. Steven rented a car for a few days and paid $256.
   d. Cathy bought some shirts at the price of $36 each.
   e. Kelly distributed 48 pens among each desk equally.

Solution:
a.
b.
c.
d.
e.

2. Find the value of each of the expressions.
   a. $30 + (52 - 8) \div 11$
   b. $125 - 4n$ if $n = 15$
   c. $(3 + a) + (126 \div b)$ if $a = 8$ and $b = 6$
   d. $m \div 5 + 7n$ if $m = 100$ and $n = 4$
   e. $14 + m \div 2b$ if $m = 60$ and $b = 6$

Solution:
a. _____
b. _____
c. _____
d. _____
e. _____

3. Use the table to write an algebraic expression for each of the following.
   a. Hannah bought ***t*** cups of milkshake. She had $6 left with her. How much money did Hannah have?
   b. Candice wanted to buy 3 cheeseburgers. She calculated that she can also buy ***y*** sandwiches with the left over money. How much money did Candice have?
   c. Kevin spent ***x*** dollars to buy French fries and distributed it to 5 of his friends. How much money did he spend on each of his friend?

Name	Prices ($)
Milkshake	3
Cheeseburger	5
French Fries	3
Apple Pie	4
Sandwich	5

Solution:
a. b. c.

4. Jasmine paid $100 to buy movie tickets. She received 2 bills of $10 and 3 bills of $1 as change. If each ticket cost m dollars, which expression shows the number of tickets that she bought? _____
   a. $(100 - 2 \times 10 + 3 \times 1) \div m$
   b. $(100 - 2 \times 10 - 3 \times 1) \div m$
   c. $m \div (100 - 2 \times 10 + 3 \times 1)$
   d. $(100 + 2 \times 10 + 3 \times 1) \div m$

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Answer Key

1. Write an expression using a variable. What does the variable represent?
   a. John is twice as tall as Jim.
   b. The cost of a jar of candies is $8. Mr. Marcus bought a few jars.
   c. Steven rented a car for a few days and paid $256.
   d. Cathy bought some shirts at the price of $36 each.
   e. Kelly distributed 48 pens among each desk equally.

Solution:
a. 2j (j = Jim's height)
b. 8j (j = no. of jars bought)
c. 256 ÷ c (c = no. of days Steven rented a car)
d. 36s (s = no. of shirts bought)
e. 48 ÷ d (d = no. of desks which got pens)

2. Find the value of each of the expressions.
   a. $30 + (52 - 8) \div 11$
   b. $125 - 4n$ if $n = 15$
   c. $(3 + a) + (126 \div b)$ if $a = 8$ and $b = 6$
   d. $m \div 5 + 7n$ if $m = 100$ and $n = 4$
   e. $14 + m \div 2b$ if $m = 60$ and $b = 6$

Solution:
a. 34
b. 65
c. 32
d. 48
e. 194

3. Use the table to write an algebraic expression for each of the following.
   a. Hannah bought ***t*** cups of milkshake. She had $6 left with her. How much money did Hannah have?
   b. Candice wanted to buy 3 cheeseburgers. She calculated that she can also buy ***y*** sandwiches with the left over money. How much money did Candice have?
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Name	Prices ($)
Milkshake	3
Cheeseburger	5
French Fries	3
Apple Pie	4
Sandwich	5

Solution:
a. $3t + 6$ b. $3 \times 5 + 5y$ c. $x \div 5$

4. Jasmine paid $100 to buy movie tickets. She received 2 bills of $10 and 3 bills of $1 as change. If each ticket cost m dollars, which expression shows the number of tickets that she bought? b
   a. $(100 - 2 \times 10 + 3 \times 1) \div m$
   b. $(100 - 2 \times 10 - 3 \times 1) \div m$
   c. $m \div (100 - 2 \times 10 + 3 \times 1)$
   d. $(100 + 2 \times 10 + 3 \times 1) \div m$