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Variables & Expressions

Sometimes people use letters to represent unspecified amounts. Such letters are called *variables*. For example, if you worked for $6 an hour, you would multiply the time you worked by 6 to find out what you earned. If we let t represent the time you worked, we could show the amount of money you earned with this expression.

$$6 \times t$$

When we say, "evaluate the expression when $t = 3$," we mean, "figure out how much money you would make if you worked for 3 hours." To do this, substitute 3 for t and complete the calculation:

Evaluate the expression $6 \times t$ when $t = 3$.

$6 \times 3 = 18$ This means you would earn $18 if you worked for 3 hours at $6 per hour.

1 Evaluate the expression $6 \times t$ when:

a $t = 2$

b $t = 4$

c $t = 5$

d $t = 8$

2 How much money would you make if you worked 15 hours and earned $6 per hour?

3 Evaluate the following expressions when each variable has the value shown. Use order of operations when you need to.

ex $4 + b$ when $b = 10$ $4 + 10 = 14$
a $4 + b$ when $b = 23$
b $4 + b$ when $b = 103$
c $3 \times n - 2$ when $n = 2$
d $3 \times n - 2$ when $n = 4$
e $2 \times k + 12$ when $k = 7$
f $2 \times k + 12$ when $k = 10$

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Cheetahs & Muffins

1a Isabel works at the city zoo. She is in charge of feeding the cheetahs. Each cheetah needs to eat 5 pounds of food each day. Which expression shows how much food the cheetahs will eat altogether each day? (The letter *c* stands for the number of cheetahs at the zoo.)

◯ $5 + c$ ◯ $c - 5$ ◯ $5 \times c$ ◯ $c \div 5$

b There are 6 cheetahs at the zoo now. How much food do they eat each day? Show all your work.

c The zoo is thinking about getting some more cheetahs. Isabel can afford to buy 70 pounds of food each day. How many cheetahs would that feed? Show all your work.

2a Every weekend Clarice and her dad bake some muffins and give 8 of them to their neighbors for breakfast on Sunday. Which expression shows how many muffins they have left over for themselves each week? (The letter *m* stands for the number of muffins they baked.)

◯ $8 + m$ ◯ $m - 8$ ◯ $8 \times m$ ◯ $m \div 8$

b If they baked 24 muffins last weekend, how many did they have left for themselves? Show all your work.

c If they wanted to have 12 muffins left for themselves, how many would they need to bake? Show all your work.

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Danny's Yard Work

1a Danny is trying to earn money to buy a new bike. His neighbor says he will pay him $4 per hour to help with yard work. His mom says she will give him a $10 bill to add to his savings after he helps his neighbor. Which expression shows how much money Danny will make? (The letter t stands for the number of hours Danny will work for his neighbor.)

◯ $4 + t + 10$ ◯ $4 \times t + 10 \times t$ ◯ $4 \times t + 10$ ◯ $14 \times t$

b How much money will Danny make if he works for 4 hours with his neighbor? Show all your work.

c If Danny wants to earn $34, how many hours will he have to work? Show all your work.

CHALLENGE

2 Pick one of the expressions from 1a above that does *not* represent Danny's situation. Describe a situation where the expression you chose *would* represent how much money Danny would make.

a The expression I chose is:

b This expression would show how much money Danny would make if...