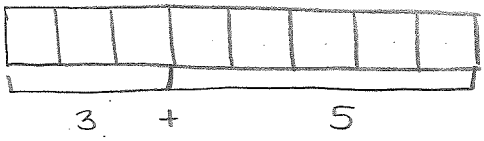
Lesson 9: Writing Addition and Subtraction Expressions

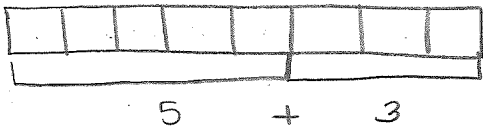
Classwork

Example 1

Create a bar diagram to show 3 plus 5.



How would this look if you were asked to show 5 plus 3?



Are these two expressions equivalent?

Yes, Both 3+5 and 5+3 have sums of 8.

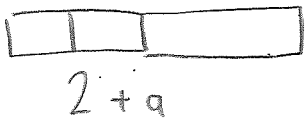
Example 2

How can we show a number increased by 2?

$a+2$ or $2+a$

Can you prove this using a model? If so, draw the model.

Yes, I can use a tape diagram.



Example 3

Write an expression to show the sum of m and k.

$m+k$ $k+m$

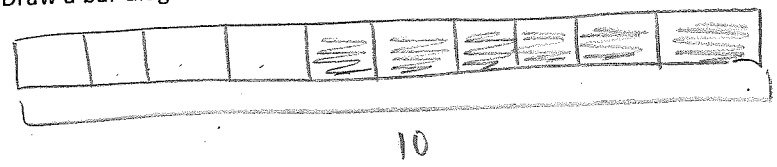
Which property can be used in Examples 1–3 to show that both expressions given are equivalent?

The commutative Property of addition.

Example 4

How can we show 10 minus 6?

- Draw a bar diagram to model this expression.



- What expression would represent this model?

$10-6$

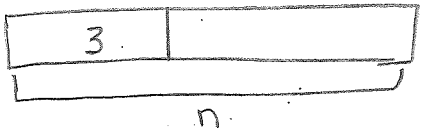
- Could we also use $6-10$?

No, if we started with 6 and tried to take 10 away, the models would not match.

Example 5

How can we write an expression to show 3 less than a number?

- Start by drawing a diagram to model the subtraction. Are we taking away from the 3 or the unknown number?



- What expression would represent this model?

$n-3$

Example 6

How would we write an expression to show the number c being subtracted from the sum of a and b?

- Start by writing an expression for "the sum of a and b."

a+b or b+a

- Now, show c being subtracted from the sum.

a+b-c or b+a-c

Example 7

Write an expression to show the number c minus the sum of a and b.

c-(a+b)

Why are the parentheses necessary in this example and not the others?

Without the ( ), only a is being taken away from c, where the expression says a+b should be taken away from c.

Replace the variables with numbers to see if $c-(a+b)$ is the same as $c-a+b$.

a=1 b=2 c=3

3-(1+2)
3-3
0

3-1+2
2+2
=4

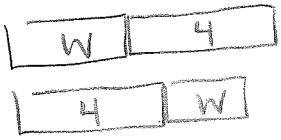
Exercises

1. Write an expression to show the sum of 7 and 1.5.

7+1.5 or 1.5+7

2. Write two expressions to show w increased by 4. Then, draw models to prove that both expressions represent the same thing.

w+4 or 4+w



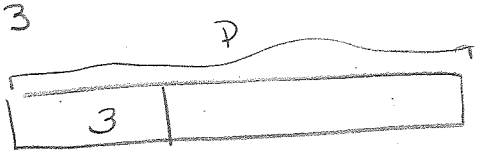
3. Write an expression to show the sum of a, b, and c.

a+b+c b+c+a c+b+a

a+c+b b+a+c c+a+b

4. Write an expression and a model showing 3 less than p.

p-3



5. Write an expression to show the difference of 3 and p.

3-p

6. Write an expression to show 4 less than the sum of g and 5.

$g+5-4$ or $4-(5+g)$

7. Write an expression to show 4 decreased by the sum of g and 5.

$4-(g+5)$ or $4-(5+g)$

8. Should Exercises 6 and 7 have different expressions? Why or why not?

The expressions are different because one includes "decreased by" and the other has words "less than". The words "less than" give the amount that was taken away first, whereas the word "decreased by" gives us a starting amount and then the amount is taken away.