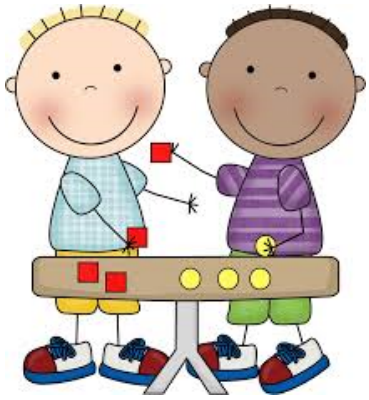
1) (+4) + (-1)
2) 70 - 12
3) ½ Of 42
4) 9 000 ÷ 100
5) 50 ÷ 5
6) 147 X 10
7) 19 X 2
8) 12 X 25
9) What number is divisible by 4? a) 143 b) 212 c) 122
10) 175 ÷ 25



Subtracting Integers

2.4 Subtracting Integers with Tiles

Focus Use coloured tiles to subtract integers.

To add integers, we combine groups of tiles.
To subtract integers, we do the reverse:
we remove tiles from a group.

Recall that equal numbers of
red and yellow tiles model 0.
For example, +5 and −5 form 5 zero pairs,
and (−5) + (+5) = 0

Adding a zero pair to a set of tiles does not change its value.
For example, (−3) + 0 = −3

Explore

You will need coloured tiles.
Use tiles to subtract.
Add zero pairs when you need to.
Sketch the tiles you used in each case.

- (+5) − (+3) +2 ✓
- (+5) − (−3) +8
- (−3) − (+5) −8
- (−3) − (−5)

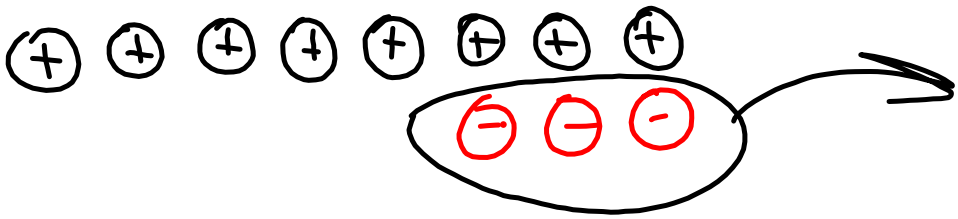
Reflect & Share +2

Compare your results with those of another pair of classmates.
Explain why you may have drawn different sets of tiles, yet both may be correct.
When you subtracted, how did you know how many tiles to use to model each integer? How did adding zero pairs help you?

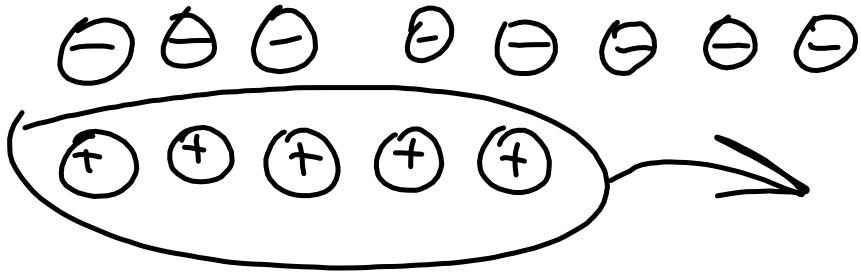
Connect

To use tiles to subtract integers, we model the first integer, then take away the number of tiles indicated by the second integer.

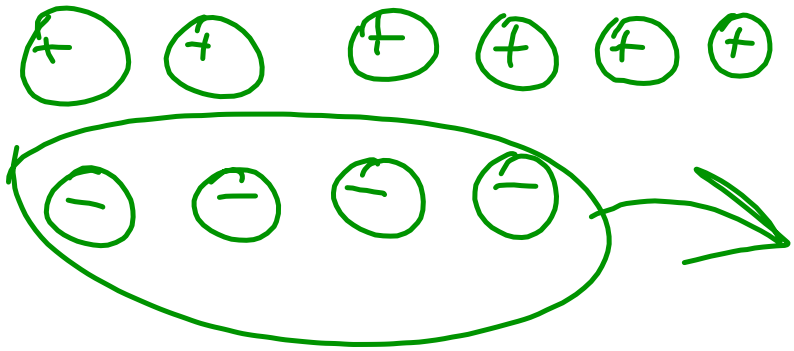
$(+5) - (-3) = +8$



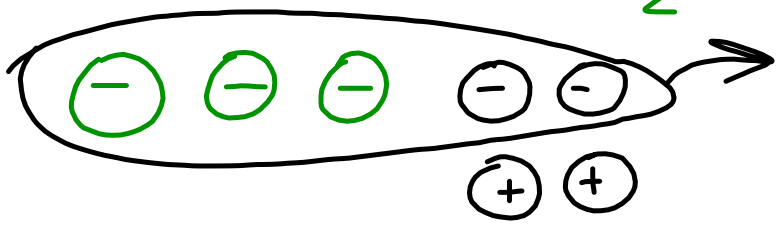
$(-3)-(+5)=-8$



$(+2) - (-4) = +6$

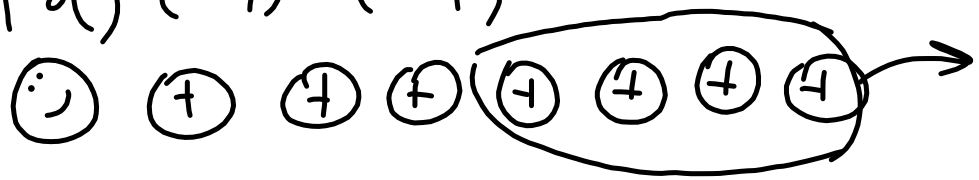


$(-3) - (-5) = +2$ .5/2

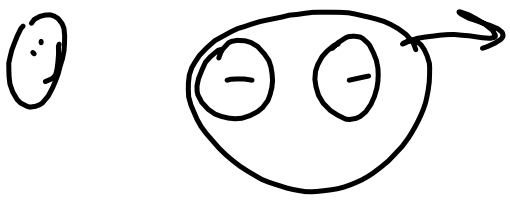


p. 69

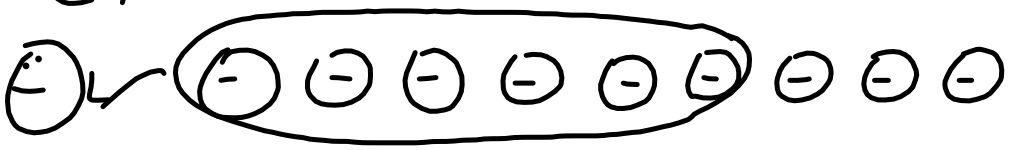
1 a) (+7) − (+4)



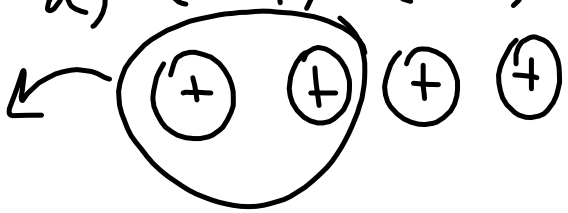
b) (−2) − (−2) = 0



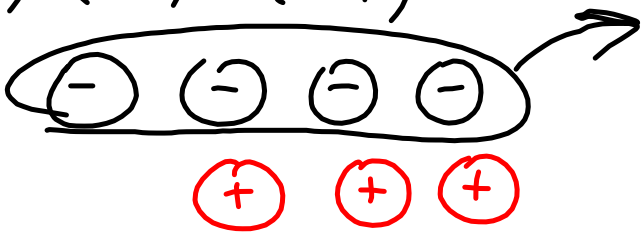
c) $(-9)-(-6)=-3$



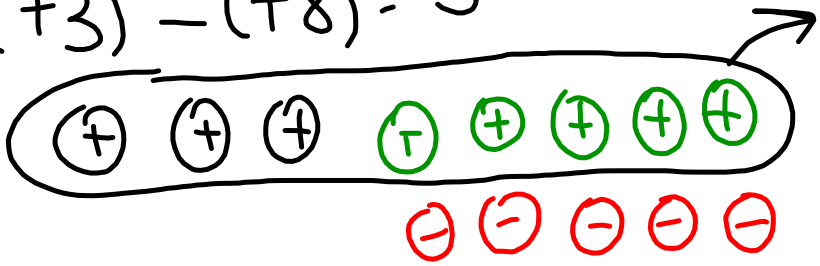
d) $(+4)-(+2)=+2$



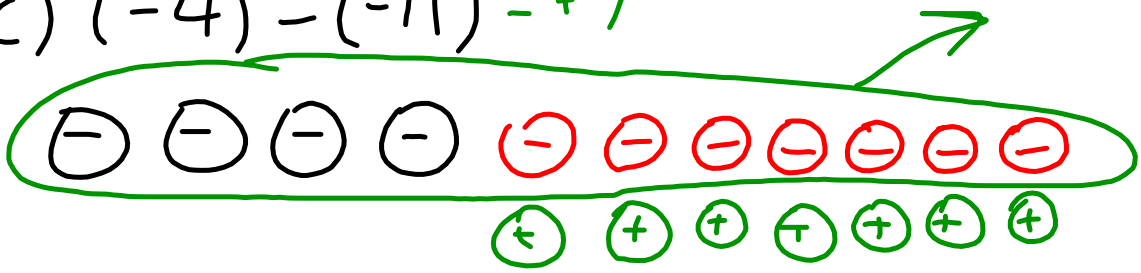
2a) $(-1)-(-4)=+3$



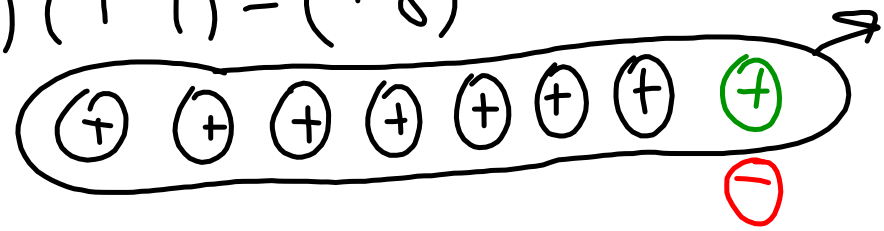
b) $(+3)-(+8)=-5$



c) $(-4)-(-11)=+7$



d) $(+7)-(+8)=-1$



Example

Use tiles to subtract.

a) $(-2) - (-6)$ **b)** $(-6) - (+2)$ **c)** $(+2) - (-6)$

A Solution

a) $(-2) - (-6)$

Model -2.

There are not enough tiles to take away -6.

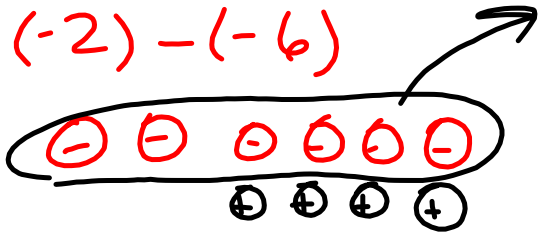
To take away -6, we need 4 more red tiles.

We add zero pairs without changing the value.

Add 4 red tiles and 4 yellow tiles.

Now take away 6 red tiles.

Since 4 yellow tiles remain, we write: $(-2) - (-6) = +4$



$(-3) - (+5)$

Example

Use tiles to subtract.

a) $(-2) - (-6)$ **b)** $(-6) - (+2)$ **c)** $(+2) - (-6)$

A Solution

a) $(-2) - (-6)$

Model -2. 

There are not enough tiles to take away -6.

To take away -6, we need 4 more red tiles.

We add zero pairs without changing the value.

Add 4 red tiles and 4 yellow tiles.

Now take away 6 red tiles.

Since 4 yellow tiles remain, we write: $(-2) - (-6) = +4$

b) $(-6) - (+2)$

Model -6. 

There are no yellow tiles to take.
We need 2 yellow tiles to take away.

We add zero pairs.
Add 2 yellow tiles and 2 red tiles.

Now take away 2 yellow tiles.

Since 8 red tiles remain, we write: $(-6) - (+2) = -8$

c) $(+2) - (-6)$

Model $+2$. 

There are no red tiles to take.
We need 6 red tiles to take away.

We add zero pairs.
Add 6 red tiles and 6 yellow tiles.

Now take away 6 red tiles.

Since 8 yellow tiles remain, we write: $(+2) - (-6) = +8$

Notice the results in the *Example*, parts b and c.
When we reverse the order in which we subtract two integers,
the answer is the opposite integer.
$(-6) - (+2) = -8$
$(+2) - (-6) = +8$

Practice

1. Use tiles to subtract. Draw pictures of the tiles you used.

a) $(+7) - (+4)$ **b)** $(-2) - (-2)$ **c)** $(-9) - (-6)$

d) $(+4) - (+2)$ **e)** $(-8) - (-1)$ **f)** $(+3) - (+3)$

2. Use tiles to subtract.

a) $(-1) - (-4)$ **b)** $(+3) - (+8)$ **c)** $(-4) - (-11)$

d) $(+7) - (+8)$ **e)** $(-4) - (-6)$ **f)** $(+1) - (+10)$

3. Subtract.

a) $(-4) - (-1)$ **b)** $(+8) - (+3)$ **c)** $(-11) - (-4)$

d) $(+8) - (+7)$ **e)** $(-6) - (-4)$ **f)** $(+10) - (+1)$

4. Subtract. Write the subtraction equations.

a) $(+4) - (-7)$ **b)** $(-2) - (+8)$ **c)** $(-9) - (+5)$

d) $(+6) - (-8)$ **e)** $(-3) - (+6)$ **f)** $(-5) - (+7)$

5. Subtract.

a) $(+4) - (+5)$ **b)** $(-3) - (+5)$ **c)** $(-4) - (+3)$

d) $(-1) - (-8)$ **e)** $(+8) - (-2)$ **f)** $(+4) - (-7)$

7. **a)** Use coloured tiles to subtract each pair of integers.

i) $(+3) - (+1)$ and $(+1) - (+3)$

ii) $(-3) - (-2)$ and $(-2) - (-3)$

iii) $(+4) - (-3)$ and $(-3) - (+4)$

b) What do you notice about each pair of questions in part a?

9. **Assessment Focus** Use integers.
Write a subtraction question that would give each answer.
How many questions can you write each time?

a) $+2$ **b)** -3 **c)** $+5$ **d)** -6

10. Which expression in each pair has the greater value? Explain your reasoning.

a) i) $(+3) - (-1)$ **ii)** $(-3) - (+1)$

b) i) $(-4) - (-5)$ **ii)** $(+4) - (+5)$

11. Take It Further

a) Find two integers with a sum of -1 and a difference of $+5$.

b) Create and solve a similar integer question.

12. Take It Further Copy and complete.

a) $(+4) - \square = +3$

b) $(+3) - \square = -1$

c) $\square - (+1) = +4$

14. **Take It Further** Here is a magic square.

0	+5	−2
−1	+1	+3
+4	−3	+2

a) Subtract +4 from each entry.
Is it still a magic square? Why?

b) Subtract −1 from each entry.
Is it still a magic square? Why?