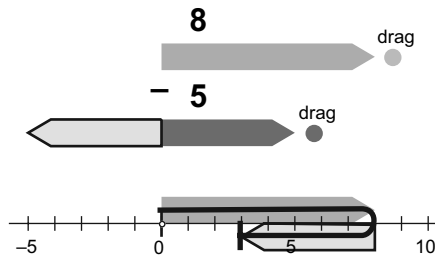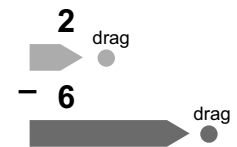# Subtracting Integers

In this activity you'll subtract integers using an animated Sketchpad model.

INVESTIGATE

1. Open links/add-sub-integers. The sketch models the subtraction problem $8 - 5$.

2. Press the *Present All* button to see the model in action.

Q1 During the animation, what happens to the arrow for 5?

Q2 How does the final position of the bottom arrows show the answer for this subtraction problem?

3. Press the *Reset* button, and then drag the circles to model $2 - 6$.

4. This time, show the animation step by step: Press the *Show Steps* button, and then press each numbered button in order.

Q3 Describe in your own words what the *3. Make Inverse* step does.

For each problem, press the buttons to show the result.

Q4 Drag the circles to model two more subtraction problems that use positive integers but have a negative result. Record each problem and its result.

Q5 If both numbers in a subtraction problem are positive, how can you tell if the answer will be positive or negative?

Q6 Model $4 - (-3)$. What's different about the *3. Make Inverse* step this time?
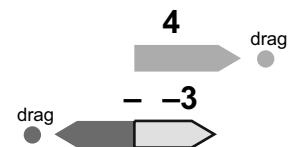
Q7 Model two more problems in which the first number is positive and the second number is negative. Record each problem. What do these models have in common?

Q8 Model three problems in which the first number is negative and the second number is positive. Record each problem. What do these models have in common?

Q9 Model the following eight problems. Record each problem and its answer.

7 **−** **−4**	**−4** **−** **7**
(number line from −5 to 5)	(number line from −5 to 5)
(number line from −10 to 0)	(number line around 0 to 5)
$2 - (-7)$	$- 2 - 7$

Q10 For each subtraction problem above, write an addition problem that has the same first number and the same answer. What do you notice?

EXPLORE MORE

Q11 Model four subtraction problems for which the difference is zero. Make the first number positive in two problems and negative in two problems. Write down the problems you used. What must be true about two numbers if their difference is zero?

−3
 − **−3**
 (number line to 5)
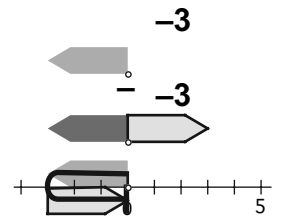
Q12 Model four subtraction problems in which the difference is the same as the first number. What must be true of these problems?

Q13 Model four subtraction problems in which the difference is the same as the second number. What must be true of these problems?

Q14 When you subtract two numbers, does the order matter? In other words, is $-3 - (-5)$ the same as $-5 - (-3)$? Explain in terms of the model why your answer makes sense.