

# Unit 7 Lesson 7: Changing Elevation

## 1 That's the Opposite (Warm up)

### Student Task Statement

1. Draw arrows on a number line to represent these situations:

a. The temperature was  $-5$  degrees. Then the temperature rose 5 degrees.



b. A climber was 30 feet above sea level. Then she descended 30 feet.



2. What's the opposite?

a. Running 150 feet east.

b. Jumping down 10 steps.

c. Pouring 8 gallons into a fish tank.

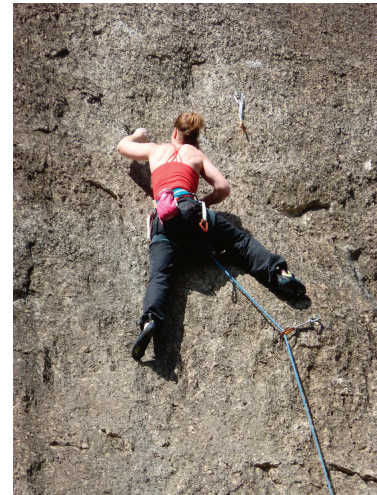
## 2 Cliffs and Caves

### Student Task Statement

1. A mountaineer is climbing on a cliff. She is 400 feet above the ground. If she climbs up, this will be a positive change. If she climbs down, this will be a negative change.

a. Complete the table.

	starting elevation (feet)	change (feet)	final elevation (feet)
A	+400	300 up	
B	+400	150 down	
C	+400	400 down	
D	+400		+50



b. Write an addition equation and draw a number line diagram for B. Include the starting elevation, change, and final elevation in your diagram.

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2. A spelunker is down in a cave next to the cliff. If she climbs down deeper into the cave, this will be a negative change. If she climbs up, whether inside the cave or out of the cave and up the cliff, this will be a positive change.

a. Complete the table.

	starting elevation (feet)	change (feet)	final elevation (feet)
<b>A</b>	-200	150 down	
<b>B</b>	-200	100 up	
<b>C</b>	-200	200 up	
<b>D</b>	-200	250 up	
<b>E</b>	-200		-500

b. Write an addition equation and draw a number line diagram for C and D. Include the starting elevation, change, and final elevation in your diagram.

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c. What does the expression  $-75 + 100$  tell us about the spelunker? What does the value of the expression tell us?

### 3 Adding Rational Numbers

#### Student Task Statement

Find the sums.

1.  $-35 + (30 + 5)$

2.  $-0.15 + (-0.85) + 12.5$

3.  $\frac{1}{2} + (-\frac{3}{4})$



## 4 School Supply Number Line (Optional)

### Student Task Statement

Your teacher will give you a long strip of paper.

Follow these instructions to create a number line.

1. Fold the paper in half along its length and along its width.
2. Unfold the paper and draw a line along each crease.
3. Label the line in the middle of the paper 0. Label the right end of the paper + and the left end of the paper -.
4. Select two objects of different lengths, for example a pen and a gluestick. The length of the longer object is  $a$  and the length of the shorter object is  $b$ .
5. Use the objects to measure and label each of the following points on your number line.

$a$	$2b$	$-b$
$b$	$a + b$	$a + -b$
$2a$	$-a$	$b + -a$

6. Complete each statement using  $<$ ,  $>$ , or  $=$ . Use your number line to explain your reasoning.

- a.  $a$  \_\_\_\_  $b$
- b.  $-a$  \_\_\_\_  $-b$
- c.  $a + -a$  \_\_\_\_  $b + -b$
- d.  $a + -b$  \_\_\_\_  $b + -a$
- e.  $a + -b$  \_\_\_\_  $-a + b$