Unit 5 Lesson 3: Changing Elevation

1 That's the Opposite (Warm up)

Student Task Statement

1. Draw arrows on a number line to represents 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.

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)
A	-200	150 down	
B	-200	100 up	
C	-200	200 up	
D	-200	250 up	
E	-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.

   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. $a + -b$ _____ $-a + b$