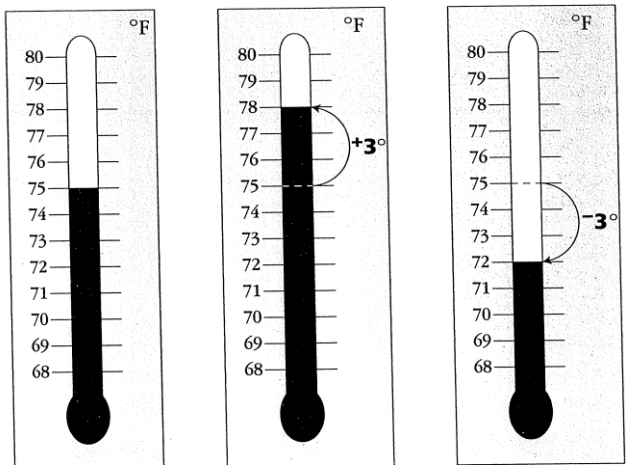
Rising and Falling Temperatures

Name: _____ Hour: _____

We have looked at various models for working with integers. In this lesson, we will explore ways to think about multiplying integers. To help us do this, we will use a thermometer to help us think about multiplying integers.

We will use a positive symbol to represent a rise in temperature and a negative symbol to represent a drop in temperature. That means, for example, if the temperature rises 3°, we will say that it changes by $+3^\circ$, and if the temperature drops 3°, we will say that it changes by -3°.



A. Suppose the temperature changed by an average of $+3^\circ$ per hour for a ten-hour period.

1. Complete the table below and use it to find the ***total*** temperature change for the first 5 hours.

Number of hours	1	2	3	4	5
Total temperature change	+3°	+6°			

2. Write a multiplication sentence that represents the total change in temperature for the first 5 hours.

3. Write a multiplication sentence that represents the total change in temperature for the entire 10-hour period.

B. Suppose the temperature changed by an average of -3° per hour for a 10-hour period.

1. Complete the table below and use it to find the total temperature change for the entire 10-hour period.

Number of hours	1	2	3	4	5
Total temperature change	−3°	−6°			

2. Write a multiplication sentence that represents the total change in temperature for the first 5 hours.

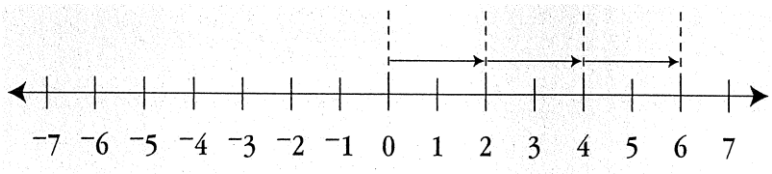
3. Write a multiplication sentence that represents the total change in temperature for the entire 10-hour period.

C. For each number line below, write the following:

An addition sentence illustrated by the diagram.

A multiplication sentence illustrated by the diagram.

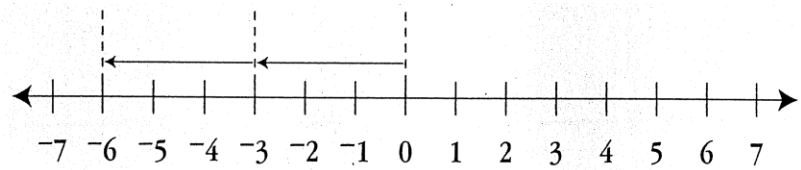
1.



Addition Sentence: _____

Multiplication sentence:_____

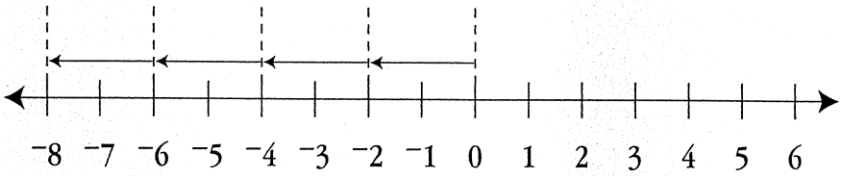
2.



Addition Sentence: _____

Multiplication sentence:_____

3.



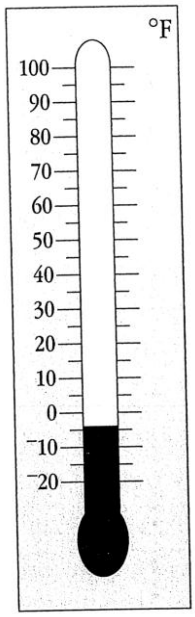
Addition Sentence: _____

Multiplication sentence:_____

D. Create a situation about temperatures that can be expressed as 4×-10.

Take it further:

1. Suppose the temperature changed by an average of $+2^{\circ}$per hour from its low of -4°F at 3:00 A.M. What was the temperature at 1:00 P.M.?



2. Suppose the temperature changed by an average of -1.5° per hour from its high of $+25^{\circ}$F at noon. What was the temperature at 10:00 P.M.?

3. When you add a positive integer and a negative integer, you sometimes get a positive result and sometimes get a negative result. Is the same true when you multiply a positive integer and a negative integer? Explain with examples to support your thoughts.