

### 1.3 Positive and Negative Numbers

1)

a)  $+6 +^{-}4 = +2$

b)  $+5 +^{-}9 =^{-}4$

3)

a)  $^{-}34.7 + +71.8$

These numbers have opposite signs, so we subtract their absolute values and then take the sign with the larger absolute value (Here it is  $+$ ).

$$^{-}34.7 + +71.8 = +37.1$$

b)  $^{-}62.3 +^{-}41.75$

These numbers have the same sign, so we add their absolute values and keep the sign.

$$^{-}62.3 +^{-}41.75 =^{-}104.05$$

c)  $+378.98 +^{-}890.017 =^{-}511.037$

d)  $^{-}56,987 + 0 =^{-}56,987$

5) Change in temperature = [Final Temp at 10 pm] - [Initial Temp at 3 pm]

$$= +24^{\circ}\text{C} - +35^{\circ}\text{C}$$

$$= +24^{\circ}\text{C} +^{-}35^{\circ}\text{C}$$

$$=^{-}11^{\circ}\text{C}$$

The  $^{-}$  sign here indicates that the temperature *fell (decreased)* over this time period.

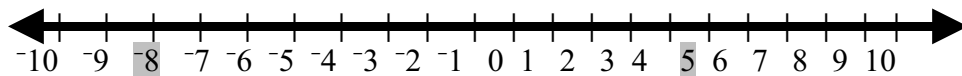
7) To find the difference, subtract:

$$14,494 \text{ ft} - (-282 \text{ ft}) = 14,494 \text{ ft} + +282 \text{ ft} = 14,776 \text{ ft}$$

Because Death Valley is below sea level, the difference is actually greater than the elevation of Mt. Whitney. You might draw a picture to convince yourself that this is true.

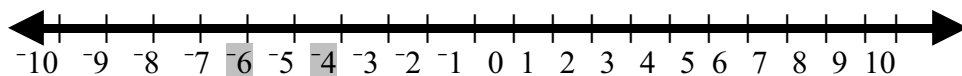
9)

a)

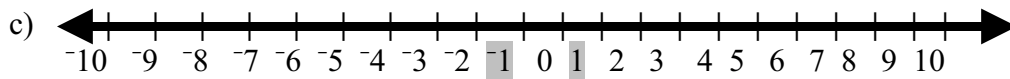


$$5 >^{-}8$$

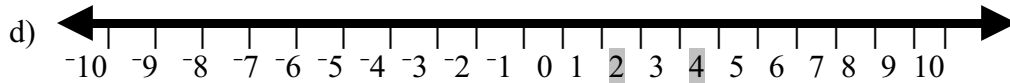
b)



$$^{-}6 <^{-}4$$



$$^{-}1 < 1$$



$$|^{-}4| > |^{-}2| \text{ since } |^{-}4| = 4 \text{ and } |^{-}2| = 2 \text{ and } 4 > 2.$$

11)  $(^{-})(^{-}) 5 \text{ ENTER} = 5$

$(^{-})(^{-})(^{-}) 5 \text{ ENTER} = ^{-}5$

$(^{-})(^{-})(^{-})(^{-}) 5 \text{ ENTER} = 5$

An even number of negative (opposite) signs in front of a positive number give a positive number. An odd number of negative (opposite) signs in front of a positive number yield a negative number.

13) The Commutative Property of Addition (Fact 1.1) is shown in Exercise 12.

15)

a) The temperature *rose*  $^{+}6 \div ^{+}2 = ^{+}3$  degrees per hour.

b) The temperature *rose*  $^{-}6 \div ^{+}2 = ^{-}3$  degrees per hour.  
This is equivalent to saying the temperature *fell*  $^{+}3$  degrees per hour.

c) The temperature *rose*  $^{-}6 \div ^{-}2 = ^{+}3$  degrees per hour.

d) The temperature *rose*  $^{+}6 \div ^{-}2 = ^{-}3$  degrees per hour.  
This is equivalent to saying the temperature *fell*  $^{+}3$  degrees per hour.

### Skill and Review

17) Since there are 3 feet in one yard ( $3 \frac{\text{ft}}{\text{yd}}$ ), and there are 12 inches in one foot ( $12 \frac{\text{in}}{\text{ft}}$ ), there are  $(12 \frac{\text{in}}{\text{ft}}) * (3 \frac{\text{ft}}{\text{yd}}) = 36$  inches in one yard =  $(36 \frac{\text{in}}{\text{yd}})$ . Therefore, in 4 yd, there are  $4 * (36 \frac{\text{in}}{\text{yd}}) = 144$  in.

19)

a)  $15 \text{ min} = \frac{15}{60} \text{ hr} = \frac{1}{4} \text{ hr} = 0.25 \text{ hr}$

b)  $0 \text{ min} = \frac{0}{60} \text{ hr} = 0.0 \text{ hr}$

c)  $30 \text{ min} = \frac{30}{60} \text{ hr} = \frac{1}{2} \text{ hr} = 0.5 \text{ hr}$

d)  $60 \text{ min} = \frac{60}{60} \text{ hr} = \frac{1}{1} \text{ hr} = 1.0 \text{ hr}$