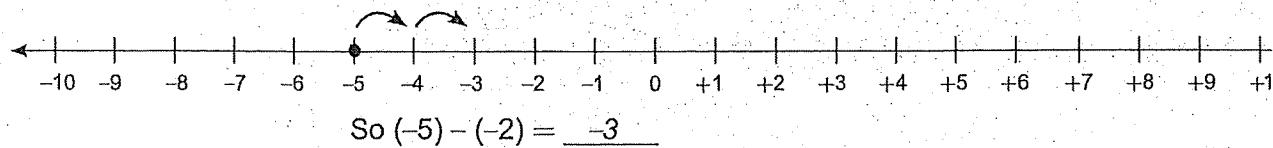


NS7-90 Subtracting Integers on a Number Line

Subtraction undoes addition, so to subtract an integer, do the opposite of what you would do to add the integer.

Example: $(-5) - (-2)$ To add (-2) , move 2 units to the left.

To subtract (-2) , move 2 units to the right.

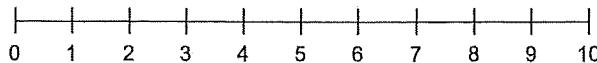


1. Use a number line to subtract.

a) $(+6) - (-3)$

To add (-3) , move units .

To subtract (-3) , move units .

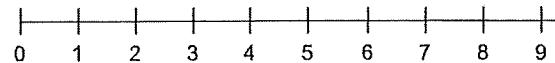


So $(+6) - (-3) = \underline{\hspace{2cm}}$

b) $(+5) - (+2)$

To add $(+2)$, move units .

To subtract $(+2)$, move units .

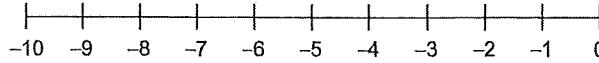


So $(+5) - (+2) = \underline{\hspace{2cm}}$

c) $(-5) - (+4)$

To add $(+4)$, move units .

To subtract $(+4)$, move units .

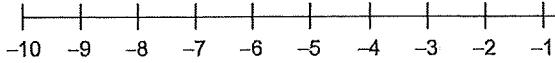


So $(-5) - (+4) = \underline{\hspace{2cm}}$

d) $(-5) - (-3)$

To add (-3) , move units .

To subtract (-3) , move units .

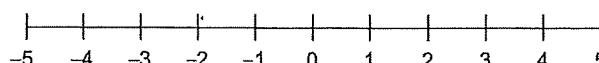


So $(-5) - (-3) = \underline{\hspace{2cm}}$

e) $(+3) - (+5)$

To add $(+5)$, move units .

To subtract $(+5)$, move units .

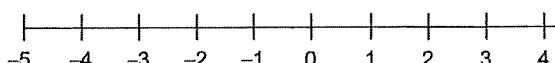


So $(+3) - (+5) = \underline{\hspace{2cm}}$

f) $(+2) - (-1)$

To add (-1) , move units .

To subtract (-1) , move units .

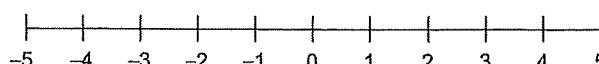


So $(+2) - (-1) = \underline{\hspace{2cm}}$

g) $(-1) - (-3)$

To add (-3) , move units .

To subtract (-3) , move units .

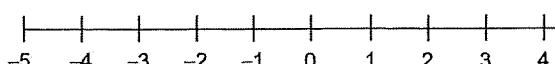


So $(-1) - (-3) = \underline{\hspace{2cm}}$

h) $(-2) - (+3)$

To add $(+3)$, move units .

To subtract $(+3)$, move units .



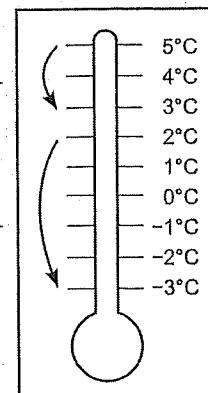
So $(-2) - (+3) = \underline{\hspace{2cm}}$

NS7-91 Subtraction Using a Thermometer

What does $2 - 5$ mean on a thermometer?

Look at $5 - 2$. If the temperature is 5° and drops 2° ,
the temperature becomes $5 - 2 = 3^\circ$.

Now switch the 2 and the 5. If the temperature is 2° and drops 5° ,
the temperature becomes $2 - 5 = -3^\circ$.



1. Use the thermometer model to calculate each expression.

a) If the temperature is 4° and the temperature drops 3° ,
the temperature becomes $4^\circ - 3^\circ = \underline{\hspace{2cm}}$.

If the temperature is 3° and the temperature drops 4° ,
the temperature becomes $3^\circ - 4^\circ = \underline{\hspace{2cm}}$.

b) If the temperature is 5° and the temperature drops 1° ,
the temperature becomes $5^\circ - 1^\circ = \underline{\hspace{2cm}}$.

If the temperature is 1° and the temperature drops 5° ,
the temperature becomes $1^\circ - 5^\circ = \underline{\hspace{2cm}}$.

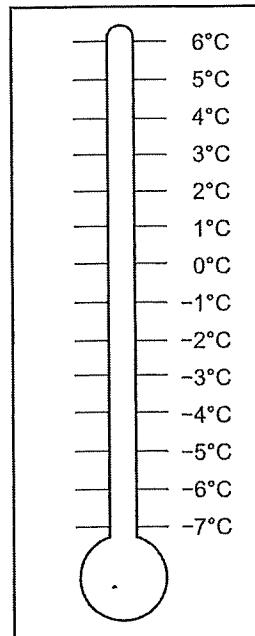
c) $6 - 4 = \underline{\hspace{2cm}}$ and $4 - 6 = \underline{\hspace{2cm}}$

d) $5 - 4 = \underline{\hspace{2cm}}$ and $4 - 5 = \underline{\hspace{2cm}}$

e) $4 - 1 = \underline{\hspace{2cm}}$ and $1 - 4 = \underline{\hspace{2cm}}$

f) $6 - 3 = \underline{\hspace{2cm}}$ and $3 - 6 = \underline{\hspace{2cm}}$

g) $6 - 2 = \underline{\hspace{2cm}}$ and $2 - 6 = \underline{\hspace{2cm}}$



2. a) Look at your answers in Question 1. In general, how does $a - b$ compare to $b - a$?

b) Use your answer to part a) to predict $98 - 101$: _____

c) Check your prediction on a calculator. Were you correct? _____

3. Use the thermometer model to subtract.

a) $(-2) - 3 = \underline{\hspace{2cm}}$ and $(-3) - 2 = \underline{\hspace{2cm}}$ b) $(-1) - 5 = \underline{\hspace{2cm}}$ and $(-5) - 1 = \underline{\hspace{2cm}}$

c) $(-4) - 2 = \underline{\hspace{2cm}}$ and $(-2) - 4 = \underline{\hspace{2cm}}$ d) $(-4) - 3 = \underline{\hspace{2cm}}$ and $(-3) - 4 = \underline{\hspace{2cm}}$

4. Look at your answers in Question 3.

How does $(-a) - b$ compare to $(-b) - a$? _____

How do both of these compare to $a + b$? _____

5. Use the thermometer model to find the negative integer minus the positive integer. Then change the sign (as you did in Question 2) to find the positive integer minus the negative integer.

a) $(-2) - 3 = \underline{-5}$
so $3 - (-2) = \underline{+5}$

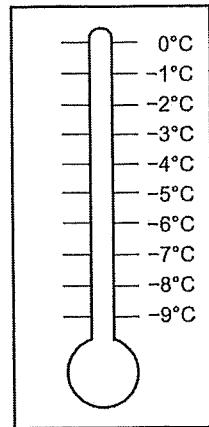
b) $(-1) - 4 = \underline{\quad}$
so $4 - (-1) = \underline{\quad}$

c) $(-5) - 3 = \underline{\quad}$
so $3 - (-5) = \underline{\quad}$

d) $(-5) - 4 = \underline{\quad}$
so $4 - (-5) = \underline{\quad}$

e) $(-4) - 5 = \underline{\quad}$
so $5 - (-4) = \underline{\quad}$

f) $(-6) - 3 = \underline{\quad}$
so $3 - (-6) = \underline{\quad}$



6. Copy each answer from Question 5. How can you get the same answer by adding instead of subtracting? Write the correct positive integer in the blank.

a) $3 - (-2) = \underline{+5}$
so $3 - (-2) = 3 + \underline{(+2)}$

b) $4 - (-1) = \underline{\quad}$
so $4 - (-1) = 4 + \underline{\quad}$

c) $3 - (-5) = \underline{\quad}$
so $3 - (-5) = 3 + \underline{\quad}$

d) $4 - (-5) = \underline{\quad}$
so $4 - (-5) = 4 + \underline{\quad}$

e) $5 - (-4) = \underline{\quad}$
so $5 - (-4) = 5 + \underline{\quad}$

f) $3 - (-6) = \underline{\quad}$
so $3 - (-6) = 3 + \underline{\quad}$

7. In general, $a - (-b)$ gives the same result as $a + \underline{\quad}$.

8. Change the subtraction of a negative integer to the addition of a positive integer.

a) $4 - (-2) = 4 + \underline{2}$
= $\underline{6}$

b) $7 - (-7) = 7 + \underline{\quad}$
= $\underline{\quad}$

c) $8 - (-3) = 8 + \underline{\quad}$
= $\underline{\quad}$

d) $(-5) - (-1) = (-5) + \underline{\quad}$
= $\underline{\quad}$

e) $(-3) - (-4) = -3 + \underline{\quad}$
= $\underline{\quad}$

f) $(-2) - (-5) = -2 + \underline{\quad}$
= $\underline{\quad}$

To subtract a positive integer, imagine moving down the thermometer.

To subtract a negative integer, add its opposite or move up the thermometer.

9. a) $(-4) - 6 = \underline{\quad}$ b) $(-4) - (-6) = \underline{\quad}$ c) $(-2) - (-4) = \underline{\quad}$
 d) $6 - 7 = \underline{\quad}$ e) $(-9) - 4 = \underline{\quad}$ f) $6 - (-7) = \underline{\quad}$
 g) $2 - 7 = \underline{\quad}$ h) $2 - (-7) = \underline{\quad}$ i) $-2 - (-7) = \underline{\quad}$
 j) $(-2) - 7 = \underline{\quad}$ k) $(-7) - 2 = \underline{\quad}$ l) $7 - (-2) = \underline{\quad}$