

8. [Integer +,-]

Skill 8.1 Adding integers.

MM5.2 1 1 2 2 3 3 4 4
MM10 1 1 2 2 3 3 4 4

- Use these sign rules:

If same: $++ = +$

Example: $(-9) + (+3)$
 $= -9 + 3$
 $= -6$

If different: $+ - = -$

Example: $(-9) + (-3)$
 $= -9 - 3$
 $= -12$

- Subtract the numbers and keep the sign in front of the greatest integer.

- Add the numbers and keep the minus sign.

Hint: The sign of a number should not be confused with the operations of addition or subtraction.

$$(+5) + (-8) = 5 + (-8) = -3$$

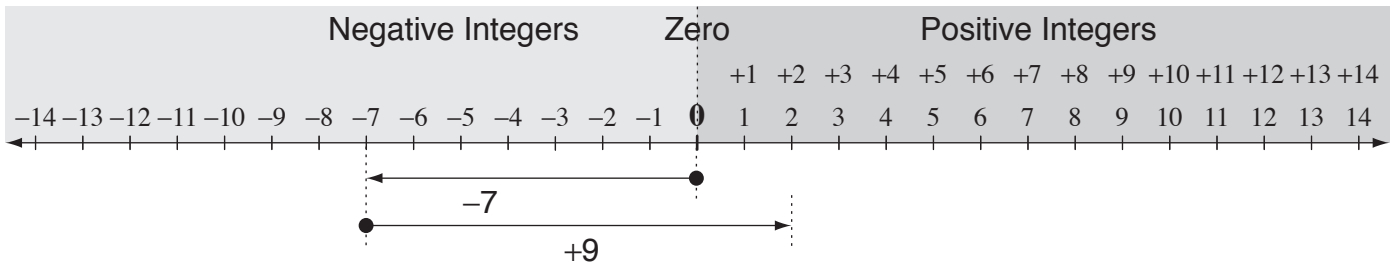
No sign so +5 (positive 5)

Negative sign attached to 8

Hint: Every number has a sign attached to it, so if there is no sign, the number is positive.

- The sign can also be visualised using a number line.

Hint: '-' means move left or backwards and '+' means move right or forwards.



Q. $(-7) + (+9) =$

A. $(-7) + (+9)$
 $= -7 + 9$
 $= 2$

a) $(+5) + (-7) =$
 $= 5 - 7 = \boxed{-2}$

b) $(-4) + (-8) =$
 $= -4 - 8 = \boxed{-12}$

c) $(-5) + (-3) =$
 $= -5 - 3 = \boxed{-8}$

d) $(+2) + (-8) =$
 $= 2 - 8 = \boxed{-6}$

e) $(+4) + (-6) =$
 $= 4 - 6 = \boxed{-2}$

f) $(-7) + (+4) =$
 $= -7 + 4 = \boxed{-3}$

g) $(-3) + (+6) =$
 $= -3 + 6 = \boxed{3}$

h) $(+5) + (-8) =$
 $= 5 - 8 = \boxed{-3}$

i) $(+2) + (-14) =$
 $= 2 - 14 = \boxed{-12}$

j) $(-16) + (+9) =$
 $= -16 + 9 = \boxed{-7}$

k) $(-15) + (-8) =$
 $= -15 - 8 = \boxed{-23}$

l) $2 + (-7) =$
 $= 2 - 7 = \boxed{-5}$

Skill 8.2 Subtracting integers.

MM5.2 1 2 3 4
MM10 1 2 3 4

- Use these sign rules:

If same: $-- = +$

Example: $(-9) - (-3)$
 $= -9 + 3$
 $= -6$

If different: $-+ = -$

Example: $(-9) - (+3)$
 $= -9 - 3$
 $= -12$

- Subtract the numbers and keep the sign in front of the greatest integer.

- Add the numbers and keep the minus sign.

Hint: The sign of a number should not be confused with the operations of addition or subtraction.

$$(+5) - (-8) = 5 - (-8) = 5 + 8 = 13$$

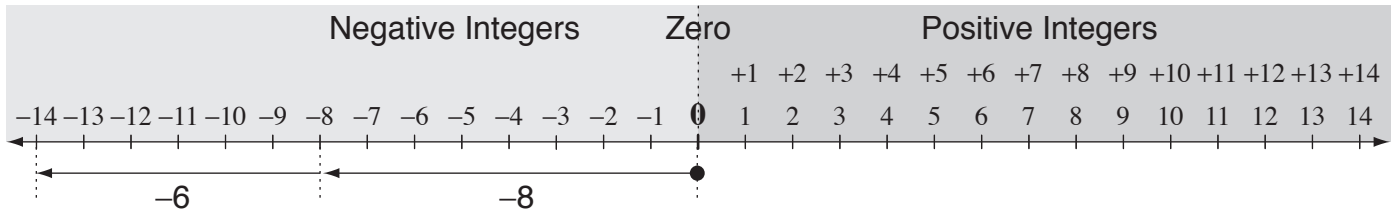
No sign so +5 (positive 5)

Negative sign attached to 8

Hint: Every number has a sign attached to it, so if there is no sign, the number is positive.

- The sign of the result of the subtraction can also be visualised using a number line.

Hint: '-' means move left or backwards and '+' means move right or forwards.



Q. $(-8) - (+6) =$

A. $(-8) - (+6)$
 $= -8 - 6$
 $= -14$

a) $(-5) - (-6) =$

$= -5 + 6 = \boxed{1}$

b) $(+3) - (+9) =$

$= 3 - 9 = \boxed{}$

c) $(+7) - (+8) =$

$= - = \boxed{}$

d) $(+7) - (-7) =$

$= - = \boxed{}$

e) $(-3) - (-2) =$

$= - = \boxed{}$

f) $(-4) - (-8) =$

$= - = \boxed{}$

g) $(+6) - (-7) =$

$= - = \boxed{}$

h) $(+4) - (-9) =$

$= - = \boxed{}$

i) $(-19) - (+11) =$

$= - = \boxed{}$

j) $(-16) - (+9) =$

$= - = \boxed{}$

k) $(-12) - (-15) =$

$= - = \boxed{}$

l) $-6 - -3 =$

$= - = \boxed{}$

Skill 8.3 Adding and subtracting integers.

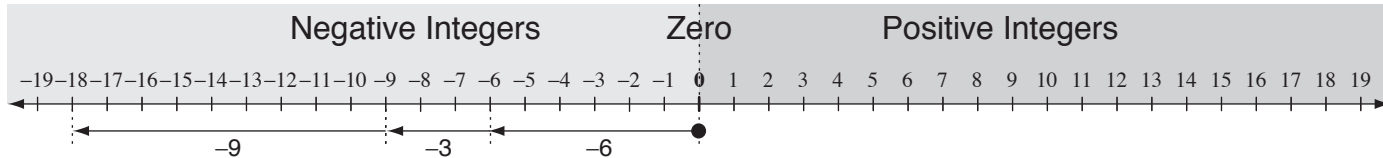
MM5.2 11 22 33 44
MM10 11 22 33 44

- Add and/or subtract from left to right.
- Use these sign rules:

If same: $++ = +$
 $-- = +$

If different: $+- = -$
 $-+ = -$

- The sign of the result can also be visualised using a number line.



Q. $(-6) - (+3) - (+9) =$

A. $(-6) - (+3) - (+9)$
 $= -6 - 3 - 9$ (sign rule: $-+ = -$)
 $= -9 - 9$ (work from left to right)
 $= -18$ (start at -9 , move backward 9 more)

a) $(-5) + (-6) + (+9) =$ (sign rules: $+-- = -$, $++ = +$)
 $= -5 - 6 + 9$ (subtract, keep "-")
 $= -11 + 9 = \boxed{-2}$

b) $(+1) - (-7) - (-7) =$ (sign rule: $-- = +$)
 $= 1 +$
 $= \dots = \boxed{}$

c) $(+9) + (-6) - (-2) =$
 $= \dots = \boxed{}$

d) $(-8) - (-5) + (+4) =$
 $= \dots = \boxed{}$

e) $(-2) + (-6) - (-9) =$
 $= \dots = \boxed{}$

f) $(+5) - (+7) - (-8) =$
 $= \dots = \boxed{}$

g) $(+3) - (-6) + (-8) =$
 $= \dots = \boxed{}$

h) $(+5) + (-4) - (+3) =$
 $= \dots = \boxed{}$

i) $(-2) - (-6) - (+7) =$
 $= \dots = \boxed{}$

j) $(+7) + (+15) + (-19) =$
 $= \dots = \boxed{}$

k) $(-12) - (-13) + (+15) =$
 $= \dots = \boxed{}$

l) $(-14) - (+16) + (+18) =$
 $= \dots = \boxed{}$

m) $8 - 2 - -7 =$
 $= \dots = \boxed{}$

n) $5 + -7 + -9 =$
 $= \dots = \boxed{}$

o) $-6 + 5 + -8 =$
 $= \dots = \boxed{}$

p) $-9 - 2 + -4 =$
 $= \dots = \boxed{}$

q) $10 + -5 + -6 =$
 $= \dots = \boxed{}$

r) $-5 + -10 + 12 =$
 $= \dots = \boxed{}$

Skill 8.4 Adding and subtracting integers using order of operations.

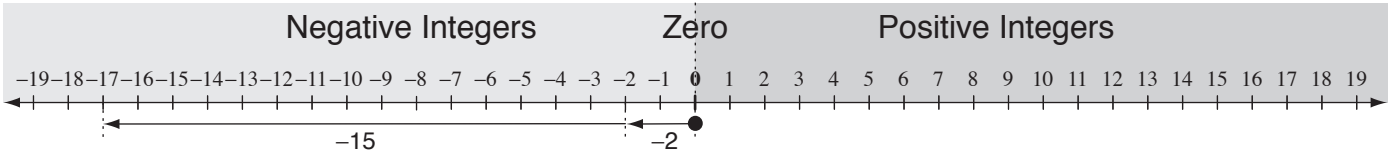
MM5.2 11 22 33 44
MM10 11 22 33 44

- Complete the operations in the correct order.
 - Simplify within brackets.
 - Add and/or subtract from left to right.
- Use these sign rules:

If same: $++ = +$
 $-- = +$

If different: $+- = -$
 $-+ = -$

- The sign of the result can also be visualised using a number line.



Q. $(5 - 7) - (6 + 9) =$

A. $(5 - 7) - (6 + 9)$ — complete the brackets first
 $= (-2) - (+15)$
 $= -2 - 15$ — $-+ = -$
 $= -17$ — start at -2 , move backward 15 more

a) $4 + (-6 + 3) =$ — brackets first
 $= 4 + (-3)$ — $+- = -$
 $= 4 - 3 = \boxed{1}$

b) $2 + (4 - 9) =$
 $= 2 + (-5)$
 $= \dots = \boxed{\dots}$

c) $7 + (3 - 8) =$
 $= \dots = \boxed{\dots}$

d) $4 - (9 - 7) =$
 $= \dots = \boxed{\dots}$

e) $5 - (-8 + 6) =$
 $= \dots = \boxed{\dots}$

f) $6 + (-5 - 4) =$
 $= \dots = \boxed{\dots}$

g) $7 - (3 - 4) =$
 $= \dots = \boxed{\dots}$

h) $10 + (-2 - 5) =$
 $= \dots = \boxed{\dots}$

i) $8 - (-3 + 9) =$
 $= \dots = \boxed{\dots}$

j) $(2 - 5) - (3 + 4) =$ — brackets first
 $= (-3) - (+7)$ — $-+ = -$
 $= -3 - 7$ — add, keep "-"
 $= \dots = \boxed{\dots}$

k) $(8 - 4) + (3 - 9) =$
 $= \dots = \boxed{\dots}$

l) $(5 - 9) - (9 - 5) =$
 $= \dots = \boxed{\dots}$

m) $(5 + 6) - (4 - 11) =$
 $= \dots = \boxed{\dots}$

n) $(3 - 8) + (9 - 14) =$
 $= \dots = \boxed{\dots}$

o) $(-8 - 6) - (7 - 13) =$
 $= \dots = \boxed{\dots}$

Skill 8.5 Finding missing integers using addition and subtraction.

MM5.2 11 22 33 44
MM10 11 22 33 44

- Circle the positive integer (no sign) or negative integer ('-' sign) that is on the side of the unknown.
Hint: Don't confuse the sign with the operation. (see skill 8.1, page 85)
- Use the inverse operations of addition or subtraction to remove the circled integer from the side of the unknown.
Hint: e.g. +6 added to -6 will cancel each other and leave zero as the result.
- Perform the same operation on the other side of the equation.
- If the unknown has a negative sign attached, multiply both sides of the equation by another negative sign.
Hint: '- - = +' i.e. The sign of the unknown will become its inverse, a '+'.

Q. $-6 - \boxed{} = 8$

A. $\textcircled{-6} - x = 8$ *Use inverse of -6*
 ~~$-6 - x + 6 = 8 + 6$~~ *+6 to both sides*
 $-x = 8 + 6$
 ~~$-x = 8 + 6$~~ *cancel*
 $-x = 8 + 6$
 $-x = 14$ *Use inverse of '-'*
 $- -x = -14$ *- - = +*
 $x = -14$

a) $\boxed{-8} + \textcircled{-4} = -12$

$x + \cancel{-4} + 4 = -12 + 4$

$x = -8$

b) $\boxed{} - \textcircled{3} = -5$

$x - 3 + 3 = -5 + 3$

c) $4 + \boxed{} = -3$

$4 + x$

d) $\boxed{} - -6 = -9$

e) $-5 + \boxed{} = 13$

f) $-8 + \boxed{} = -3$

g) $\boxed{} + -4 = -8$

h) $\boxed{} - -6 = 1$

i) $\boxed{} + 7 = -4$

j) $9 - \boxed{11} = -2$

~~$9 - x - 9 = -2 - 9$~~

$-x = -11 \Rightarrow - -x = - -11$ *- - = +*

k) $-6 - \boxed{} = 7$

l) $-9 - \boxed{} = -3$

m) $-\boxed{} + 4 = -6$

n) $8 - \boxed{} = 5$

o) $-\boxed{} - 7 = 3$