

8. [Integer +,-]

Skill 8.1 Adding integers.

MM5.2 1 2 3 4 4
MM6.1 1 2 3 4 4

Hint: Every number has a sign attached to it, so if there is no sign, the number is positive. These signs should not be confused with the operations of addition and subtraction.

Using a number line

- Start at 0.
- When the number is “+” move that many to the right.
- When the number is “-” move that many to the left.

Using Addition Rules

Addition Rules

same signs:

Add the numbers, ignoring their signs.
Keep that sign.

Addition Rules

different signs:

Subtract the numbers, ignoring their signs.
Keep the sign of the larger number.

Example:

$$(+4) + (+3) = +(4 + 3) = +7 = 7 \text{ or simply}$$

$$4 + 3 = 7$$

$$(-5) + (-8) = -(5 + 8) = -13 \text{ or simply}$$

$$-5 + -8 = -13$$

Example:

$$(-9) + (+3) = -(9 - 3) = -6 \text{ or simply}$$

$$-9 + 3 = -6$$

$$(-4) + (+11) = +(11 - 4) = +7 = 7 \text{ or simply}$$

$$-4 + 11 = 7$$

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

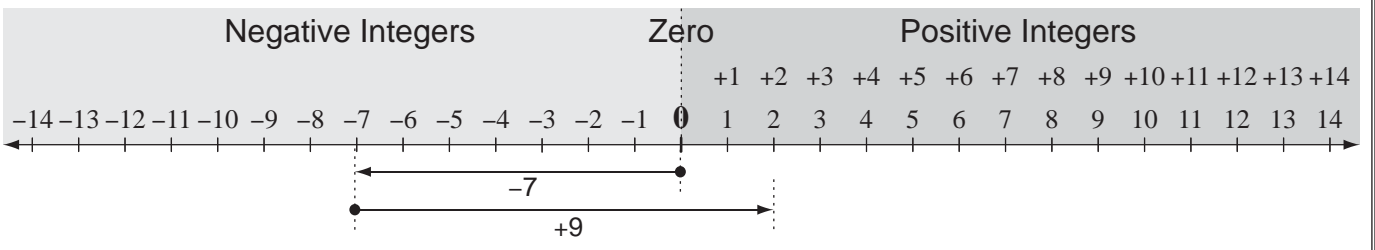
A. $(-7) + (+9)$

$$= -7 + 9$$

$$= 2$$

++=+

start at -7, move forward 9



a) $(+5) + (-7) =$
 $= 5 - 7 =$ -2

+ - = -
subtract, keep “-”

b) $(-4) + (-8) =$
 $= -4$

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

d) $(+2) + (-8) =$
 $=$

e) $(+4) + (-6) =$
 $=$

f) $(-7) + (+4) =$
 $=$

g) $(-3) + (+6) =$
 $=$

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

i) $(+2) + (-14) =$
 $=$

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

k) $(-15) + (-8) =$
 $=$

l) $2 + -7 =$
 $=$

Skill 8.2 Subtracting integers.

MM5.2 1 1 2 2 3 4 4
MM6.1 1 1 2 2 3 3 4 4

Hint: Every number has a sign attached to it, so if there is no sign, the number is positive. These signs should not be confused with the operations of addition and subtraction.

Using a number line

- Start at 0.
- When the number is “+” move that many to the right.
- When the number is “-” move that many to the left.

Using Addition Rules

- Consider subtracting an integer as adding its opposite. So change the number to be subtracted to its opposite. Example: $8 - (-2) = 8 + (+2)$
- Then apply the addition rules.

Addition Rules

same signs:

Add the numbers, ignoring their signs. Keep that sign.

Example:

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

or simply $-9 - (-3) = -9 + 3 = -6$

$$(-4) - (-11) = (-4) + (+11) = +(11 - 4)$$

$= +7 = 7$ or simply $-4 - (-11) = -4 + 11 = 7$

Addition Rules

different signs:

Subtract the numbers, ignoring their signs. Keep the sign of the larger number.

Example:

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

or simply $-5 - 8 = -13$

$$(+4) - (-3) = (+4) + (+3) = +(4 + 3) = +7 = 7$$

or simply $4 - (-3) = 4 + 3 = 7$

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

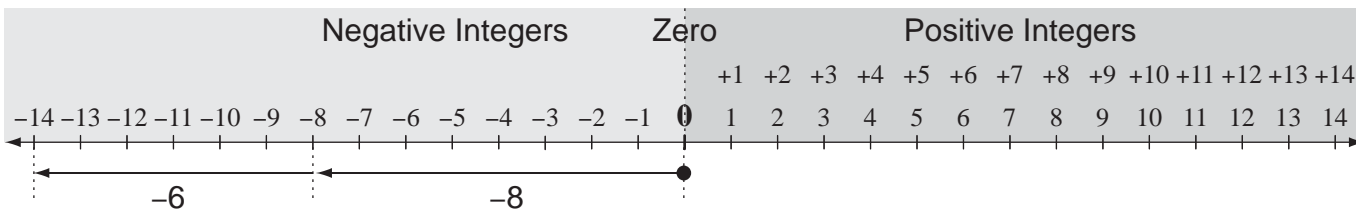
A. $(-8) - (+6)$

$$= -8 - 6$$

$$= -14$$

+ - = -

start at -8, move backward 6



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

$$= -5 + 6$$

1

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

$$= 3 - 9$$

subtract, keep “-”

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

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

$$= \dots =$$

l) $-6 - -3 =$

$$= \dots =$$

- Use the sign rules. (see skills 8.1, page 87 and 8.2, page 88)

Addition Rules

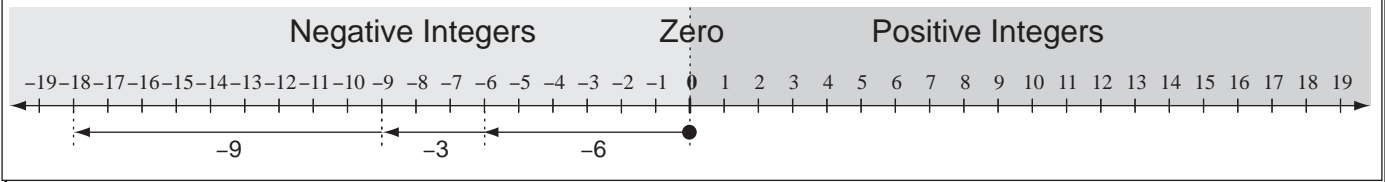
same signs:
Add the numbers, ignoring their signs.
Keep that sign.

Addition Rules

different signs:
Subtract the numbers, ignoring their signs.
Keep the sign of the larger number.

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

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



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

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

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

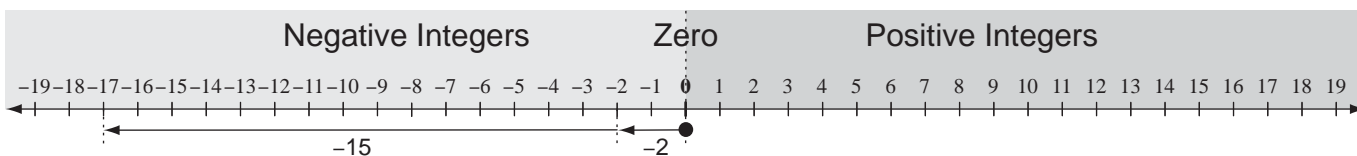
r) $-5 + -10 + 12 =$
 $= \dots = \boxed{}$

Skill 8.4 Adding and subtracting integers using order of operations.

MM5.2 1 1 2 2 3 3 4 4
MM6.1 1 1 2 2 3 3 4 4

- Complete the operations in the correct order.
 - Simplify within brackets.
 - Add and/or subtract from left to right.
- Use the sign rules. (see skills 8.1, page 87 and 8.2, page 88)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Skill 8.5 Finding missing integers using addition and subtraction.

MM5.2 1 1 2 2 3 3 4 4
MM6.1 1 1 2 2 3 3 4 4

- 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 87)
- 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 '+'.
Use inverse of '-
--- = +*

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

A. $\textcircled{-6} - x = 8$ *Use inverse of -6*

$\cancel{-6} - x \cancel{+6} = 8 + 6$ *+6 to both sides*

$-x = 8 + 6$ *cancel*

$--x = -14$ *Use inverse of '-
--- = +*

$x = -14$

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

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

$x = -8$

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

$\cancel{9} - x \cancel{-9} = -2 - 9$

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

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

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

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

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

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

