

Adding a positive integer: $(-2) + 9$ $4 + 5$ $(-7) + 12$

positive positive positive

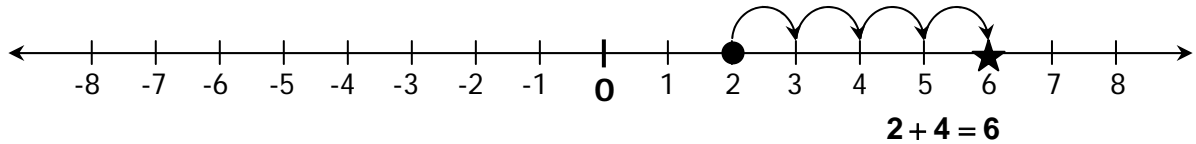
↓ ↓ ↓

- Start at the first number and move right along the number line

Examples:

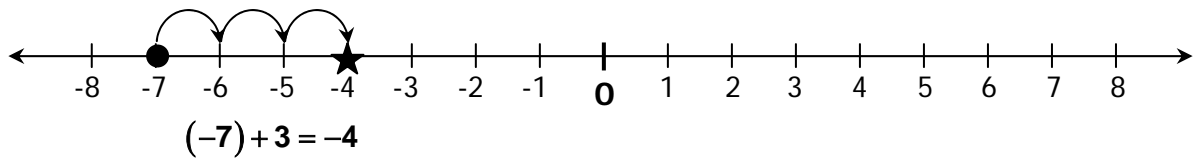
$2 + 4 =$

- Start at 2 and move 4 spaces to the right



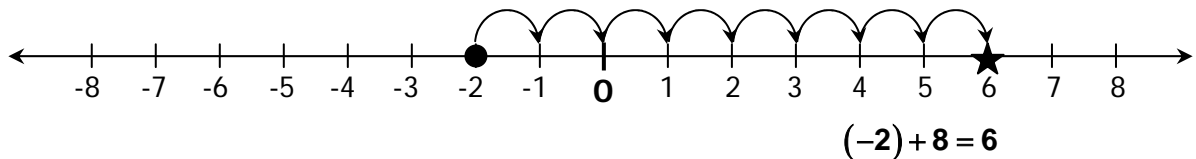
$(-7) + 3 =$

- Start at -7 and move 3 spaces to the right



$(-2) + 8 =$

- Start at -2 and move 8 spaces to the right



Practice:

- a) $(-4) + 9 =$
- b) $(-1) + 5 =$
- c) $3 + 4 =$
- d) $(-8) + 3 =$
- e) $(-2) + 6 =$
- f) $(-11) + 4 =$
- g) $(-12) + 3 =$
- h) $(-20) + 31 =$

Answers:

- a) $(-4) + 9 = 5$
- b) $(-1) + 5 = 4$
- c) $3 + 4 = 7$
- d) $(-8) + 3 = -5$
- e) $(-2) + 6 = 4$
- f) $(-11) + 4 = -7$
- g) $(-12) + 3 = -9$
- h) $(-20) + 31 = 11$

Subtracting a positive integer: $(-1) - 9$ $6 - 2$ $(-4) - 8$

positive positive positive

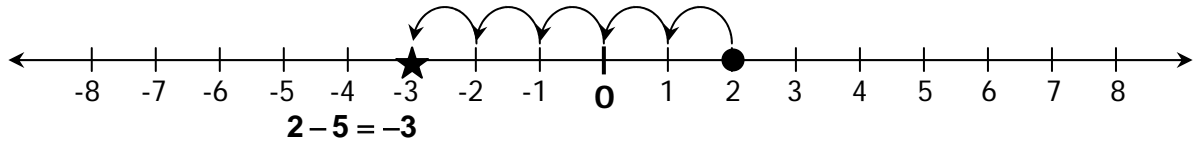
↓ ↓ ↓

- Start at the first number and move left along the number line

Examples:

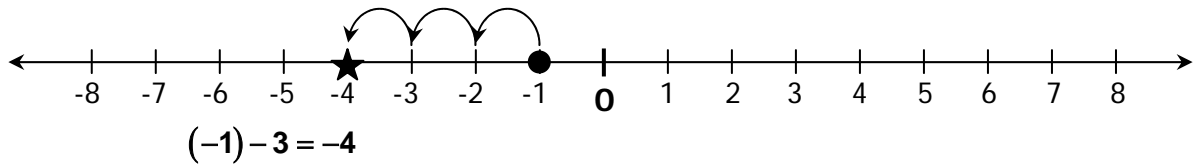
$2 - 5 =$

- Start at 2 and move 5 spaces to the left



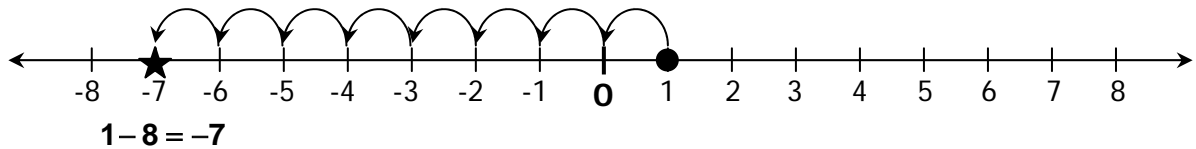
$(-1) - 3 =$

- Start at -1 and move 3 spaces to the left



$1 - 8 =$

- Start at 1 and move 8 spaces to the left



Practice:

- a) $5 - 9 =$
- b) $8 - 3 =$
- c) $(-2) - 4 =$
- d) $(-1) - 8 =$
- e) $3 - 10 =$
- f) $5 - 20 =$
- g) $(-11) - 22 =$
- h) $8 - 32 =$

Answers:

- a) $5 - 9 = -4$
- b) $8 - 3 = 5$
- c) $(-2) - 4 = -6$
- d) $(-1) - 8 = -9$
- e) $3 - 10 = -7$
- f) $5 - 20 = -15$
- g) $(-11) - 22 = -33$
- h) $8 - 32 = -24$

Adding a negative integer: $7 + (-4)$ $(-3) + (-11)$ $2 + (-9)$

negative
↓
negative
↓
negative
↓

- Adding a negative integer is the same as subtracting a positive integer

Examples:

$10 + (-8) =$ ← Here we are adding -8

$10 - 8 =$ ← Rewrite as subtracting 8

$10 - 8 = 2$ ← Solve using rule for subtracting a positive integer (previous page)

$(-3) + (-2) =$ ← Here we are adding -2

$(-3) - 2 =$ ← Rewrite as subtracting 2

$(-3) - 2 = -5$ ← Solve using rule for subtracting a positive integer (previous page)

$(-1) + (-6) =$ ← Here we are adding -6

$(-1) - 6 =$ ← Rewrite as subtracting 6

$(-1) - 6 = -7$ ← Solve using rule for subtracting a positive integer (previous page)

Practice:

a) $5 + (-2) =$

b) $8 + (-9) =$

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

d) $(-1) + (-5) =$

e) $3 + (-3) =$

f) $(-9) + (-9) =$

g) $10 + (-3) =$

h) $(-13) + (-6) =$

i) $16 + (-5) =$

j) $7 + (-20) =$

k) $(-35) + (-45) =$

Answers:

a) $5 + (-2) = 3$

b) $8 + (-9) = -1$

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

d) $(-1) + (-5) = -6$

e) $3 + (-3) = 0$

f) $(-9) + (-9) = -18$

g) $10 + (-3) = 7$

h) $(-13) + (-6) = -19$

i) $16 + (-5) = 11$

j) $7 + (-20) = -13$

k) $(-35) + (-45) = -80$

Subtracting a negative integer: $7 - (-4)$ $(-13) - (-8)$ $2 - (-1)$

negative
↓
negative
↓
negative
↓

- Subtracting a negative integer is the same as adding a positive integer

Examples:

$$10 - (-8) = \quad \leftarrow \text{Here we are subtracting } -8$$

$$10 + 8 = \quad \leftarrow \text{Rewrite as adding } 8$$

$$10 + 8 = 18 \quad \leftarrow \text{Solve using the rule for adding a positive integer}$$

$$(-3) - (-5) = \quad \leftarrow \text{Here we are subtracting } -5$$

$$(-3) + 5 = \quad \leftarrow \text{Rewrite as adding } 5$$

$$(-3) + 5 = 2 \quad \leftarrow \text{Solve using the rule for adding a positive integer}$$

$$(-9) - (-4) = \quad \leftarrow \text{Here we are subtracting } -4$$

$$(-9) + 4 = \quad \leftarrow \text{Rewrite as adding } 4$$

$$(-9) + 4 = -5 \quad \leftarrow \text{Solve using the rule for adding a positive integer}$$

Practice:

a) $3 - (-2) =$

b) $(-6) - (-1) =$

c) $(-5) - (-7) =$

d) $8 - (-3) =$

e) $(-6) - (-10) =$

f) $(-9) - (-9) =$

g) $11 - (-14) =$

h) $(-15) - (-5) =$

i) $23 - (-8) =$

j) $(-35) - (-20) =$

k) $(-87) - (-41) =$

Answers:

a) $3 - (-2) = 5$

b) $(-6) - (-1) = -5$

c) $(-5) - (-7) = 2$

d) $8 - (-3) = 11$

e) $(-6) - (-10) = 4$

f) $(-9) - (-9) = 0$

g) $11 - (-14) = 25$

h) $(-15) - (-5) = -10$

i) $23 - (-8) = 31$

j) $(-35) - (-20) = -15$

k) $(-87) - (-41) = -46$

Practice, Practice, Practice

Practice:

a) $3 + (-7) =$

b) $(-2) + (-9) =$

c) $4 - 7 =$

d) $(-6) + 10 =$

e) $(-5) - (-5) =$

f) $(-2) - 8 =$

g) $6 - 11 =$

h) $(-9) + 7 =$

i) $14 + (-8) =$

j) $(-20) - (-14) =$

k) $(-6) + (-10) =$

l) $4 - (-6) =$

m) $(-12) + 6 =$

n) $(-5) - (-17) =$

o) $8 - (-7) =$

p) $(-2) - (-13) =$

q) $(-18) + 18 =$

r) $11 - 14 =$

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

t) $21 + (-18) =$

u) $(-100) - (-87) =$

v) $(-63) + (-23) =$

Answers:

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

b) $(-2) + (-9) = -11$

c) $4 - 7 = -3$

d) $(-6) + 10 = 4$

e) $(-5) - (-5) = 0$

f) $(-2) - 8 = -10$

g) $6 - 11 = -5$

h) $(-9) + 7 = -2$

i) $14 + (-8) = 6$

j) $(-20) - (-14) = -6$

k) $(-6) + (-10) = -16$

l) $4 - (-6) = 10$

m) $(-12) + 6 = -6$

n) $(-5) - (-17) = 12$

o) $8 - (-7) = 15$

p) $(-2) - (-13) = 11$

q) $(-18) + 18 = 0$

r) $11 - 14 = -3$

s) $(-16) + (-9) = -25$

t) $21 + (-18) = 3$

u) $(-100) - (-87) = -13$

v) $(-63) + (-23) = -86$

Multiplying and Dividing Integers

- Multiply or divide as you would normally
- Determine the sign (positive or negative) by using the following rules:

Multiplying

positive \times positive = positive
 negative \times negative = positive
 negative \times positive = negative

Examples:

$$\begin{aligned}(-3)(-7) &= 21 \\ (-2) \times 9 &= -18 \\ 5 \times (-6) &= -30 \\ (-4)(-10) &= 40\end{aligned}$$

Practice:

$$\begin{aligned}a. 12 \div (-6) &= \\ b. (-4) \times (-4) &= \\ c. \frac{(-10)}{5} &= \\ d. (-2)(8) &= \\ e. (-56) \div (-7) &= \\ f. \frac{(-3)(-10)}{(-5)} &= \\ g. 2 \times (-3) \times (-4) &= \\ h. \frac{(-6)(-8)}{(-4)(3)} &= \\ i. (-21) \div 7 &= \\ j. \frac{36}{(3)(-3)} &= \\ k. (-3) \times (3) \times (-3) &= \\ l. \frac{(-42)}{(-3)} &= \end{aligned}$$

Dividing

positive \div positive = positive
 negative \div negative = positive
 negative \div positive = negative

Examples:

$$\begin{aligned}24 \div (-6) &= -4 \\ \frac{(-40)}{(-8)} &= 5 \\ (-14) \div (-2) &= 7 \\ \frac{(-33)}{11} &= -3\end{aligned}$$

Answers:

$$\begin{aligned}a. 12 \div (-6) &= -2 \\ b. (-4) \times (-4) &= 16 \\ c. \frac{(-10)}{5} &= -2 \\ d. (-2)(8) &= -16 \\ e. (-56) \div (-7) &= 8 \\ f. \frac{(-3)(-10)}{(-5)} &= -6 \\ g. 2 \times (-3) \times (-4) &= 24 \\ h. \frac{(-6)(-8)}{(-4)(3)} &= -4 \\ i. (-21) \div 7 &= -3 \\ j. \frac{36}{(3)(-3)} &= -4 \\ k. (-3) \times (3) \times (-3) &= 27 \\ l. \frac{(-42)}{(-3)} &= 14\end{aligned}$$