



On Adding & Subtracting

Hand in Quiz then Review rules for add, subtract, multiply and divide Integers



Adding

Signs same
 ↳ add # part
 Keep same sign

$$\begin{matrix} (-) + (-) \\ \swarrow \quad \searrow \\ \text{add \# part} = - \end{matrix}$$

$$\begin{matrix} (+) + (+) \\ \swarrow \quad \searrow \\ \text{add \# part} = + \end{matrix}$$

Signs d'ffer

↳ what is difference of # part
 Keep sign of larger # part

Subtract

↳ add opposite

follow adding rules

$$\begin{matrix} (\#) - (-\#) \\ \downarrow \quad \downarrow \\ \text{add} \quad \text{opp} \end{matrix}$$

$$\begin{matrix} (\#) - (+\#) \\ \downarrow \quad \downarrow \\ \text{add} \quad \text{opp} \end{matrix}$$

or

$$\begin{matrix} (\#) - (+\#) \\ \downarrow \quad \downarrow \\ (\#) + (-\#) \end{matrix}$$

multiply/÷

Same sign

↳ +

$$\begin{matrix} (+) \times (+) = (+) \\ (-) \times (-) = (+) \end{matrix}$$

different

↳ (-)

$$\begin{matrix} (+) \times (-) = - \\ (-) \times (+) = - \end{matrix}$$

Warm up

Add, subtract, multiply or divide (Use rules)

(show work for subtract)

1) $(+8) \times (+9)$
 $= (+72)$

Same

2) $(-7) \times (-5)$
 $= (+35)$

Same

4) $(-2) - (+13)$
 $(-2) + (-13)$
 (-15)

diff

4) $(-18) \div (+9)$
 (-2)

6) $(+14) \times (-2)$
 (-28)

7) $(+7) - (-10)$
 $(+7) + (+10)$
 $(+17)$

diff

after the quiz

3) $(+4) + (-17) = (-13)$

diff sign

5) $(-7) + (-11) = (-18)$

8) $(-15) \div (-3)$
 $(+5)$

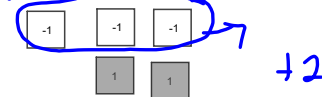
Sheet 283

1a) $(+5) - (+2)$
 $= +5 + (-2)$
 $= +3$

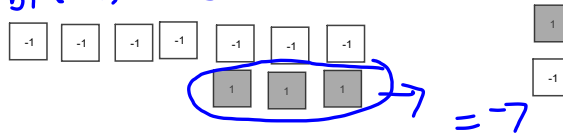
c) $(-6) - (+5)$
 $(-6) + (-5)$
 -11

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

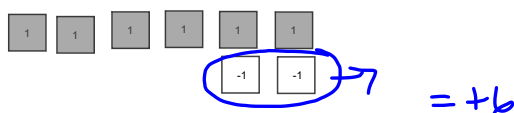
2 a) $(-1) - (-3)$



b) $(-4) - (+3)$



c) $(+4) - (-2)$



Homework Solutions

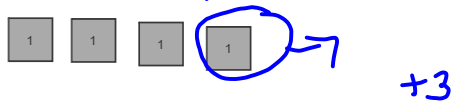
b) $(-3) - (+6)$
 $(-3) + (-6)$
 $= -9$

d) $(-7) - (-1)$
 $(-7) + (+1)$
 -6

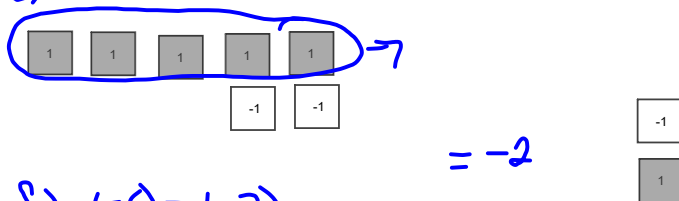
f) $(+7) - (-9)$
 $(+7) + (+9)$
 $+16$

Homework Solutions

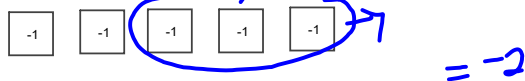
d) $(+4) - (+1)$



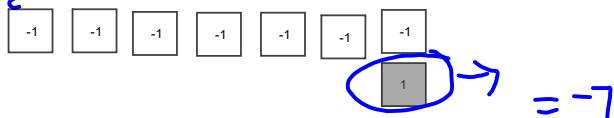
e) $(+3) - (+5)$



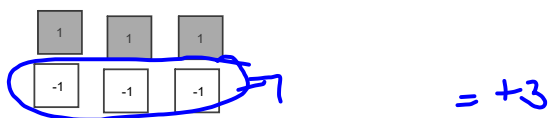
f) $(-5) - (-3)$



g) $(-6) - (+1)$



h) $0 - (-3)$



Homework Solutions

3 a) $(+5) - (+4)$
 $= +1$

b) $(+6) - (-8)$
 $(+6) + (+8)$
 $+14$

c) $(-7) - (-1)$
 $(-7) + (+1)$
 -6

d) $(+4) - (-7)$
 $(+4) + (+7)$
 $+11$

e) $(-3) - (+8)$
 $(-3) + (-8)$
 -11

f) $(+5) - (-7)$
 $(+5) + (+7)$
 $+12$

g) $0 - (+2)$
 $0 + (-2)$
 $= -2$

h) $(-20) - (-11)$
 $-20 + (+11)$
 -9

i) $(+6) - (-6)$
 $(+6) + (+6)$
 $+12$

j) $(-8) - (+8)$
 $-8 + (-8)$
 -16

$$4. \begin{array}{l} (+2) - (-2) \\ (+2) + (+2) \\ +23 \end{array}$$

Homework Solutions

The temperature increased 23°

$$5a) \begin{array}{l} (-2) - (+3) \\ (-2) + (-3) \\ -5 \end{array}$$

$$\begin{array}{l} (+3) - (-2) \\ (+3) + (+2) \\ +5 \end{array}$$

$$b) \begin{array}{l} (-5) - (-3) \\ (-5) + (+3) \\ -2 \end{array}$$

$$\begin{array}{l} (-3) - (-5) \\ (-3) + (+5) \\ +2 \end{array}$$

Order is important when subtracting.

$$6a) \begin{array}{l} (-5) - (-1) - (+3) \\ (-5) + (+1) + (-3) \\ = -7 \end{array}$$

Homework Solutions

$$b) \begin{array}{l} (-4) - (-6) - (-1) \\ -4 + (+6) + (+1) \\ +3 \end{array}$$

$$c) \begin{array}{l} (-5) - (+8) - (+6) \\ (-5) + (-8) + (-6) \\ -19 \end{array}$$

$$d) \begin{array}{l} (+10) - (+3) - (-7) \\ +7 + (+7) \\ +14 \end{array}$$

$$e) \begin{array}{l} (-2) - (-8) - (+4) \\ (-2) + (+8) + (-4) \\ +2 \end{array}$$

$$f) \begin{array}{l} (-3) - (-3) - (-7) \\ 0 + (+7) \\ +7 \end{array}$$

$$g) \begin{array}{l} (+4) - (-1) - (-5) \\ (+4) + (+1) + (+5) \\ +10 \end{array}$$

$$h) \begin{array}{l} (-3) - (-4) - (+5) \\ (-3) + (+4) + (-5) \\ -4 \end{array}$$

Section 2.5 Order of Operations with Integers

Order of Operations

We have already learned that you can add or multiply in any order, but that order matters with subtraction and division. Therefore, **if you have a question that contains more than one operation, the order in which you answer the question is very important.**

There is a set of rules to follow. Often students remember the order, by **remembering the word BEDMAS**. That is, first you solve anything that is inside the brackets. Next, you simplify any exponents. Then, do all the multiplication and division in the question, in the order it occurs from left to right. Finally, you do the addition and subtraction in the order it occurs from left to right.

B - Brackets

E - Exponents

**D } Division and Multiplication, in the order
M } it occurs from left to right.**

**A } Addition and Subtraction, in the order it
S } occurs from left to right.**

Examples:

BEDMAS

$$\begin{aligned} \text{a) } & 6 - 2 \times 4 \\ & = 6 - 8 \\ & = (-2) \end{aligned}$$

$$\begin{aligned} \text{b) } & 4 \times 4 + 2 - 8 \div 4 \\ & = 16 + 2 - 8 \div 4 \\ & = 16 + 2 - 2 \\ & = 18 - 2 \end{aligned}$$

$$\begin{aligned} \text{c) } & (-9) \times (-3) - (+4) \times (-5) \\ & = (+27) - (+4) \times (-5) \\ & = (+27) - (-20) \\ & = (+27) + (+20) \end{aligned}$$

$$\begin{aligned} \text{d) } & (+6) \times (+8) \div (-4) \times (+3) \\ & = (+48) \div (-4) \times (+3) \\ & = (-12) \times (+3) \\ & = (-36) \end{aligned}$$

$$\begin{aligned} \text{e) } & 5 \times 5 - (8 - 2 \times 3) \\ & = 5 \times 5 - (8 - 6) \\ & = 5 \times 5 - (2) \\ & = 25 - (2) \\ & = (23) \end{aligned}$$

$$\begin{aligned} \text{f) } & 2 + 8 \times 4 - (9 + 1) \\ & = 2 + 8 \times 4 - (10) \\ & = 2 + 32 - (10) \\ & = 34 - (10) \\ & = 24 \end{aligned}$$

$$\begin{aligned} \text{g) } & 6 - 4 \times 4 \div 8 \times (2 + 1) \\ & = 6 - 4 \times 4 \div 8 \times (3) \\ & = 6 - 16 \div 8 \times (3) \\ & = 6 - 2 \times (3) \\ & = 6 - 6 \\ & = 0 \end{aligned}$$

$$\begin{aligned} \text{h) } & 4 \times 5 \times 5 - [8 - (-3) \times (+5)] \\ & = 4 \times 5 \times 5 - [8 - (-15)] \\ & = 4 \times 5 \times 5 - [8 + (+15)] \\ & = 4 \times 5 \times 5 - (+23) \\ & = 20 \times 5 - (+23) \\ & = 100 - (+23) \\ & = 100 + (-23) \\ & = (+77) \end{aligned}$$

Examples:

a) $6 - 2 \times 4$
 $6 - 8$
 $6 + (-8)$
 $= -2$

b) $4 \times 4 + 2 - 8 \div 4$
 $16 + 2 - 8 \div 4$
 $16 + 2 - (2)$
 $18 - (2)$
 $= 16$

c) $(-9) \times (-3) - (+4) \times (-5)$
 $(+27) - (+4) \times (-5)$
 $(+27) - (-20)$
 $(+27) + (+20)$
 $= (+47)$

d) $(+6) \times (+8) \div (-4) \times (+3)$
 $(+48) \div (-4) \times (+3)$
 $(-12) \times (+3)$
 $= (-36)$

e) $5 \times 5 - (8 - 2 \times 3)$
 $= 5 \times 5 - (8 - 6)$
 $= 5 \times 5 - (2)$
 $= (25) - (2)$
 $= \boxed{23}$

f) $2 + 8 \times 4 - (9 + 1)$
 $= 2 + 8 \times 4 - (10)$
 $= 2 + 32 - (10)$
 $= 34 - (10)$
 $= \boxed{24}$

g) $6 - 4 \times 4 \div 8 \times (2 + 1)$
 $6 - 4 \times 4 \div 8 \times (3)$
 $= 6 - 16 \div 8 \times (3)$
 $= 6 - (2) \times (3)$
 $= 6 - (6)$
 $= \boxed{0}$

h) $4 \times 5 \times 5 - [8 - (-3) (+5)]$
 $= 4 \times 5 \times 5 - [8 - (-15)]$
 $= 4 \times 5 \times 5 - [8 + (+15)]$
 $= 4 \times 5 \times 5 - [+23]$
 $= (20) \times 5 - (+23)$
 $= 100 - (+23)$
 $= \boxed{+77}$

Example:

Hint: Evaluate Numerator and Denominator separately

$$\frac{[16 - (-4)] \times (-3)}{3(-2)}$$

Top
Bottom

Step 1)

Step 2)

Step 3)

Top

$$[16 - (-4)] \times (-3)$$

$$[16 + (+4)] \times (-3)$$

$$(20) \times (-3)$$

$$(-60)$$

Bottom

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

$$= (-6)$$

Top ÷ Bottom
 $(-60) \div (-6)$
 $\boxed{+10}$