Adding Integers

Same Sign (SS) → Add → Keep Sign

or

Different Sign (DS) → Subtract → Original Sign of Larger Absolute Value

① $-10+(-15)$ SS

-25

② $-21+10$ DS

-11

③ $18+(-9)$ DS

9

④ $-3+(-22)$ SS

-25

Evaluate each expression if $x=-5$, $y=-12$, and $z=8$.

⑤ $x+y$

$-5+(-12)$ SS

-17

⑥ $y+z$

$-12+8$ DS

-4

Subtracting Integers

① $-3-8$ SS
-11

② $12-15$ DS
-3

③ $-5-(-8)$ DS
3

④ $9-(-6)$ SS
15

Evaluate each expression if $x=-5$, $y=-10$, and $z=6$

⑤ $x-z$
$-5-6$ SS
-11

⑥ $y-x$
$-10-(-5)$ DS
-5

Multiplying and Dividing Integers

1) Multiply or Divide absolute values of each number
2) Count # of negative signs
   → Even amount, answer is (+)
   → Odd amount, answer is (−)

① $-8(-2)$ Even
16

② $3(-5)$ Odd
-15

③ $-24 \div 6$ Odd
-4

④ $-120 \div (-3)$ Even
40

Evaluate each expression if $a=5$, $b=-10$, $c=2$

⑤ $5ac$
$5(-5)(2)$
$\boxed{-50}$

⑥ b^2-2a
$(-10)^2-2(-5)$
$100-2(-5)$
$100-(-10)$
$\boxed{110}$

⑦ $\frac{a+b}{3}$
$\frac{-5+(-10)}{3}$
$\frac{-15}{3}=\boxed{-5}$

Solving Addition and Subtraction Equations

① $x + 8 = 12$

$-8 \quad -8$

$x = 4$

② $y - 3 = 12$

$+3 \quad +3$

$y = 15$

③ $x + 9 = -4$

$-9 \quad -9$

$x = -13$

④ $m - 10 = -3$

$+10 \quad +10$

$m = 7$

⑤ $-2 = p + 7$

$-7 \quad -7$

$-9 = p$

⑥ $-6 + n = 5$

$+6 \quad +6$

$n = 11$

⑦ $-12 = 4 + y$

$-4 \quad -4$

$-16 = y$

⑧ $-3 = b - 1$

$+1 \quad +1$

$-2 = b$

Solving **Multiplication** Equations

1. $\frac{2x}{2} = \frac{20}{2}$

$x = 10$

2. $\frac{-3d}{-3} = \frac{18}{-3}$

$d = -6$

3. $\frac{-20}{4} = \frac{4m}{4}$

$-5 = m$

4. $\frac{-30}{-5} = \frac{-5r}{-5}$

$6 = r$

Solving Two-Step Equations

1. $2x - 7 = 5$

$+7 \quad +7$

$\frac{2x}{2} = \frac{12}{2}$

$x = 6$

2. $-4 = -3d + 20$

$-20 \quad -20$

$\frac{-24}{-3} = \frac{-3d}{-3}$

$8 = d$

3. $13 = -17 - 5m$

$+17 \quad +17$

$\frac{30}{-5} = \frac{-5m}{-5}$

$-6 = m$

4. $-11b - 5 = -104$

$+5 \quad +5$

$\frac{-11b}{-11} = \frac{-99}{-11}$

$b = 9$