



# Algebra & Operations 7th/8th

1	Evaluate: $(1 + 2 + 3) - (4 + 5 + 6) + (7 + 8 + 9)$
2	Solve the following system of equations and give your answer as a coordinate pair $(x, y)$ : $\begin{aligned} 3x + 4y &= 4 \\ x - y &= 6 \end{aligned}$
3	What is the 33rd number in the sequence: 1,6,11,16, ... ?
4	Austin interns for Microsoft and agrees to be paid 2 horses and 140 dollars for 1 year of work. Austin quits after 7 months of work and is paid 1 horse and 100 dollars. How much is 1 horse worth in dollars?
5	Kenneth can paint a certain fence in 4 hours. It will take Vedant 9 hours to paint the same fence. How many hours will it take Kenneth and Vedant to paint the fence if they work together?
6	When three numbers are added two at a time, the sums are 27, 99, and 1094. What is the sum of all three numbers?
7	360 is the sum of the integers $x$ , $y$ , and $z$ . If $x$ is $\frac{7}{5}$ of the sum $y + z$ , what is the value of the largest of the 3 integers?
8	Solve for $b$ in terms of $a$ and $c$ : $\sqrt{\frac{b}{2} + \frac{a^2}{2c^2}} = \frac{c - a}{\sqrt{2}c}$
9	Solve the system of equations and give your answer as a coordinate pair $(x, y)$ : $\begin{aligned} \frac{3x + 2y}{xy} &= \frac{1}{2} \\ \frac{x - 2y}{xy} &= \frac{3}{2} \end{aligned}$
10	Let us define the operation $a\#b$ to be $a\sqrt{b\sqrt{a\#b}}$ . Evaluate $3\#2$ .