



Algebra & Operations 7th/8th

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| 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 $3\#2$. |