

$$\textcircled{1} \quad x + 43 = 107$$

$$x + 43 - 43 = 107 - 43$$

$$\boxed{x = 64}$$

$$\textcircled{2} \quad \frac{x}{19} = 5$$

$$19 \cdot \frac{x}{19} = 19 \cdot 5 \quad \text{so } \boxed{x = 95}$$

$$\textcircled{3} \quad 3 \cdot (\text{sum}) = 48$$

$$3 \cdot (5 + x) = 48$$

$$3(5 + x) = 48$$

$$\frac{3 \cdot (5 + x)}{3} = \frac{48}{3}$$

$$1 \cdot (5 + x) = 16$$

$$5 + x = 16$$

$$5 + x + (-5) = 16 - 5$$

$$\boxed{x = 11}$$

Check

$$3(5 + x) = 48$$

$$3(5 + 11) = 48$$

$$3 \cdot (16) = 48$$

$$48 = 48 \checkmark$$

$\textcircled{4}$  Masters student salary is given in terms of the bachelor's degree student.

Let  $x$  = the bachelor student's salary.

Then  $2x - 49,000$  is an expression for the masters student salary.

We are told the sum of the 2 salaries is  $\$116,000$ , or

$$x + (2x - 49000) = 116000$$

$$x + 2x - 49000 = 116000$$

$\sim$

$$3x - 49000 = 116000$$

$$3x = 116000 + 49000$$

$$3x = 165,000$$

$$\frac{3x}{3} = \frac{165000}{3}$$

$$\boxed{x = 55,000}$$

$\sim$

④ continued

$$\text{So } x = 55,000$$

$$\begin{aligned} \text{and } 2x - 49,000 &= 2(55,000) - 49,000 \\ &= 110,000 - 49,000 \\ &= 61,000 \end{aligned}$$

So, the master's student makes \$61,000 and the bachelor's student makes \$55,000.

⑤ Let  $x$  represent the 1st unknown page number, then  $x+1$  is an expression for the 2nd page. We are told the sum of the page numbers is 525, or

$$x + x + 1 = 525$$



$$2x + 1 = 525$$

$$2x = 525 - 1$$

$$2x = 524$$

$$\frac{2x}{2} = \frac{524}{2} \text{ or } x = 262$$

Check  $x + x + 1 = 525$

$$262 + 262 + 1 = 525 \checkmark$$

⑥ Let  $x$  represent the 1st even number then  $x+2$  represents the next even integer that comes after  $x$ .

$$x + (x+2) = 118$$

$$x + x + 2 = 118$$

$$2x + 2 = 118$$

$$2x = 118 - 2$$

$$2x = 116$$

$$\frac{2x}{2} = \frac{116}{2}$$

$$\boxed{x = 58}$$

$$x = 58 \text{ home runs}$$

$$x + 2 = 60 \text{ home runs}$$

⑦ per week charge \$180 + \$0.25/mile

Let  $x$  represent number of miles traveled in a week

Then, the per week charge can be written \$180 + 0.25x

$$180 + 0.25x = 395$$

$$0.25x = 395 - 180$$

$$0.25x = 215$$

$$\frac{0.25x}{0.25} = \frac{215}{0.25}$$

$$x = 860 \text{ miles}$$

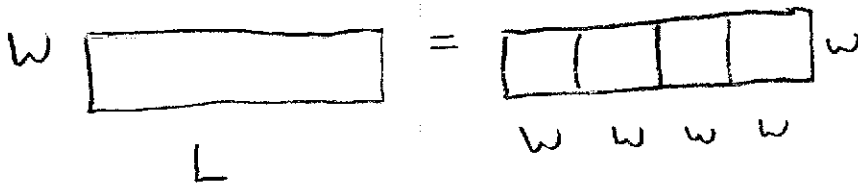
$$\text{So, } 10w = 500$$

$$\frac{10w}{10} = \frac{500}{10}$$

$$w = 50 \text{ yds}$$

$$L = 200 \text{ yds}$$

⑧



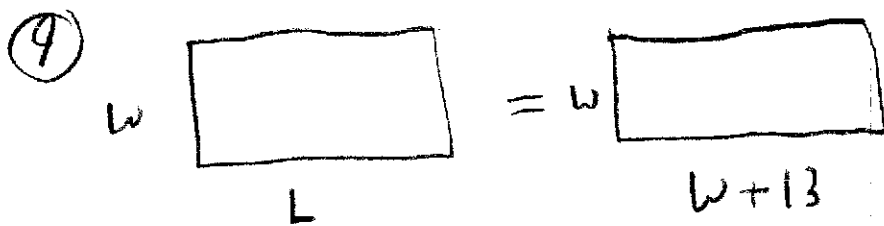
$$P = 2L + 2w \text{ perimeter formula}$$

$$500 = 2L + 2w \text{ but } L = 4w$$

$$500 = 2(4w) + 2w$$

$$500 = 8w + 2w$$

$$500 = 10w$$



$P = 2L + 2w$  perimeter formula

$86 = 2L + 2w$  but Perimeter is 86 meters

$86 = 2(w+13) + 2w$  Since  $L = w+13$

$86 = 2w + 26 + 2w$



$86 = 4w + 26$

$86 - 26 = 4w$

$60 = 4w$

$4w = 60$

$\frac{4w}{4} = \frac{60}{4}$

$w = 15$

Then

$L = w + 13 = 28$

⑩ We are told that

\$98 is 70% of an unknown number

$98 = 0.70 \cdot (x)$

$98 = 0.70x$

$0.7x = 98$

$\frac{0.7x}{0.7} = \frac{98}{0.7}$

$x = 140$

$x = \$140$

$$\textcircled{11} \left( \begin{array}{l} \text{last} \\ \text{year} \\ \text{Salary} \end{array} \right) + (9\% \text{ of salary}) = \$42,074$$

Let  $x$  represent last year's salary then we know

$$x + 0.09x = 42074, \text{ or}$$

$$1.09x = 42074 \text{ (Divide both sides by 1.09 now)}$$

$$x = \frac{42074}{1.09} \quad \text{or} \quad x = \$38,600$$

---

$\textcircled{12}$  Let  $x$  be the cost before taxes.

Cost plus 8% of cost equals total payment

$$x + 0.08x = 172.80$$

$$1.08x = 172.80$$

$$\frac{1.08x}{1.08} = \frac{172.80}{1.08}$$

$$\boxed{x = \$160}$$

