

8-27-19 6<sup>th</sup> Geo

- ①  $\angle 1$  and  $\angle 2$  are vertical angles. If  $\angle 1 = 4n + 10$  and  $\angle 2 = 2n + 30$ , what is  $\angle 1$ ?

$$\angle 1 = \angle 2 \quad \text{since vertical } \angle s.$$

$$\begin{array}{r} \downarrow \quad \downarrow \\ 4n + 10 = 2n + 30 \\ -2n \quad -2n \\ \hline \end{array}$$

$$\begin{array}{r} 2n + 10 = 30 \\ -10 \quad -10 \\ \hline \end{array}$$

$$2n = 20$$

$$n = 10$$

$$\angle 1 = 4 \cdot n + 10$$

$$4 \cdot 10 + 10$$

$$50$$

- ②  $\angle 1$  and  $\angle 2$  are complementary angles.  $\angle 1 = 4n$  and  $\angle 2 = 6n - 40$ . What is  $\angle 1$ ?

$$\angle 1 + \angle 2 = 90^\circ$$

$$4n + 6n - 40 = 90$$

$$\begin{array}{r} 10n - 40 = 90 \\ +40 \quad +40 \\ \hline \end{array}$$

$$\frac{10n}{10} = \frac{130}{10}$$

$$n = 13$$

$$\begin{aligned} \angle 1 &= 4 \cdot n \\ &= 4 \cdot 13 \\ &= 52 \end{aligned}$$

- ③  $\angle 1$  and  $\angle 2$  are a linear pair. If  $\angle 1 = 7n - 20$  and  $\angle 2 = 3n$ , what is  $\angle 1$ ?

$$\begin{aligned} \angle 1 + \angle 2 &= 180^\circ && \text{---} \diagup \text{---} \\ \downarrow \quad \downarrow &&& \\ 7n - 20 + 3n &= 180^\circ \\ 10n - 20 &= 180^\circ \\ \quad + 20 \quad + 20 &&& \\ \hline 10n &= 200 \\ n &= 20 \end{aligned}$$

$$\begin{aligned} \angle 1 &= 7n - 20 \\ &= 7 \cdot 20 - 20 \\ &= 120^\circ \end{aligned}$$

- ④  $\angle 1$  and  $\angle 2$  are complementary angles. If  $\angle 2 = 5n - 20$ , what expression represents  $\angle 1$ ?

$$\begin{aligned} \angle 1 + \angle 2 &= 90^\circ \\ \downarrow \quad \downarrow &&& \\ \angle 1 + 5n - 20 &= 90^\circ \\ \quad \quad + 20 \quad + 20 &&& \\ \hline \angle 1 + 5n &= 110 \\ \quad \quad - 5n \quad - 5n &&& \\ \hline \angle 1 &= 110 - 5n \end{aligned}$$

⑤  $\angle 1$  and  $\angle 2$  are supplementary angles. If  $\angle 1 = 20 - 4n$ , what is  $\angle 2$ ?

$$\angle 1 + \angle 2 = 180^\circ$$

↓       ↓

$$20 - 4n + \angle 2 = 180^\circ$$

- 20

- 20

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$$-4n + \angle 2 = 160$$

+ 4n

+ 4n

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$$\angle 2 = 4n + 160$$

⑥  $\angle 1$  and  $\angle 2$  are vertical angles. If

$\angle 1 = n - 10$  and  $\angle 2 = 2n - 40$ ,  
what is  $\angle 2$ ?

$$\angle 1 = \angle 2$$

$$\begin{array}{r} n - 10 = 2n - 40 \\ -n \quad \quad -n \\ \hline -10 = n - 40 \\ +40 \quad \quad +40 \\ \hline 30 = n \end{array}$$

$$\begin{aligned} \angle 2 &= 2n - 40 \\ &= 2 \cdot 30 - 40 \\ &= 20 \end{aligned}$$

8-27-19 7<sup>th</sup> Geo

- ①  $\angle 1$  and  $\angle 2$  are vertical angles. If  $\angle 1 = 6n - 10$  and  $\angle 2 = 4n + 10$ , what is  $\angle 1$ ?

$$\begin{aligned} \angle 1 &= \angle 2 \\ \downarrow \\ 6n - 10 &= 4n + 10 \\ \underline{-4n \quad -4n} & \\ 2n - 10 &= 10 \\ \underline{+10 \quad +10} & \\ 2n &= 20 \\ n &= 10 \end{aligned}$$

$\angle 1 = 6n - 10$   
 $= 6 \cdot 10 - 10$   
 $\angle 1 = 50$

- ②  $\angle 1$  and  $\angle 2$  are complementary angles. If  $\angle 1 = 8n$  and  $\angle 2 = 2n - 20$ , what is  $\angle 1$ ?

$$\begin{aligned} \angle 1 + \angle 2 &= 90^\circ \\ \downarrow \quad \downarrow & \\ 8n + 2n - 20 &= 90 \\ 10n - 20 &= 90 \\ \underline{+20 \quad +20} & \\ 10n &= 110 \\ n &= 11 \end{aligned}$$

$$\begin{aligned} \angle 1 &= 8 \cdot n \\ &= 8 \cdot 11 \\ &= 88 \end{aligned}$$

- ③  $\angle 1$  and  $\angle 2$  are a linear pair.  
If  $\angle 1 = n + 40$  and  $\angle 2 = 9n + 20$ ,  
what is  $\angle 1$ ?



$$\angle 1 + \angle 2 = 180^\circ$$
$$n + 40 + 9n + 20 = 180^\circ$$

$$\begin{array}{r} 10n + 60 = 180 \\ -60 \quad -60 \\ \hline \end{array}$$

$$\begin{array}{r} 10n = 120 \\ n = 12 \end{array}$$

$$\angle 1 = n + 40$$
$$12 + 40$$

$$\angle 1 = 52^\circ$$

- ④  $\angle 1$  and  $\angle 2$  are supplementary angles. If  $\angle 1 = 4n - 10$ ,  
what expression represents  $\angle 2$ ?

$$\angle 1 + \angle 2 = 180^\circ$$

↓      ↓

$$\begin{array}{r} 4n - 10 + \angle 2 = 180^\circ \\ +10 \qquad +10 \end{array}$$

$$\begin{array}{r} 4n + \angle 2 = 190^\circ \\ -4n \qquad -4n \end{array}$$

$$\begin{array}{r} \angle 2 = 190 - 4n \\ (-4n + 190) \end{array}$$

⑤  $\angle 1$  and  $\angle 2$  are  
complementary angles.

If  $\angle 1 = 8n - 40$ , what is  $\angle 2$ ?

$$\begin{aligned}\angle 1 + \angle 2 &= 90^\circ \\ 8n - 40 + \angle 2 &= 90 \\ \quad +40 \quad \quad +40 \\ \hline 8n + \angle 2 &= 130 \\ -8n \quad \quad -8n \\ \hline \angle 2 &= 130 - 8n\end{aligned}$$

⑥  $\angle 1$  and  $\angle 2$  are vertical  
angles.  $\angle 1 = 8n$  and  $\angle 2 = 5n + 12$ .  
What is  $\angle 1$ ?

$$\begin{aligned}\angle 1 &= \angle 2 \\ 8n &= 5n + 12 \\ -5n \quad -5n \\ \hline 3n &= 12 \\ n &= 4\end{aligned}$$

$$\begin{aligned}\angle 1 &= 8 \cdot n \\ &= 8 \cdot 4 \\ &= 32\end{aligned}$$

