Chapter 11. Radical Expressions and Triangles

Ex. 11.6

Answer 1CU.

To determine similar triangle have to follow two main tests for similarity as

If the angles of one triangle and the corresponding angles of a second triangle have equal measures, then the triangles are similar.

If the measures of the sides of two triangles form equal ratios, or are proportional, then the triangles are similar.

Answer 1PQ.

It is given that

$$a = 14, b = 48, c = ?$$

To evaluate the value of c follow step

$$c^2 = a^2 + b^2 \quad [\text{Pythagorean theorem}]$$

$$c^2 = 14^2 + 48^2 \quad [a = 14, b = 48]$$

$$c^2 = 196 + 2304$$

$$c^2 = 2500 \quad [\text{Simplify}]$$

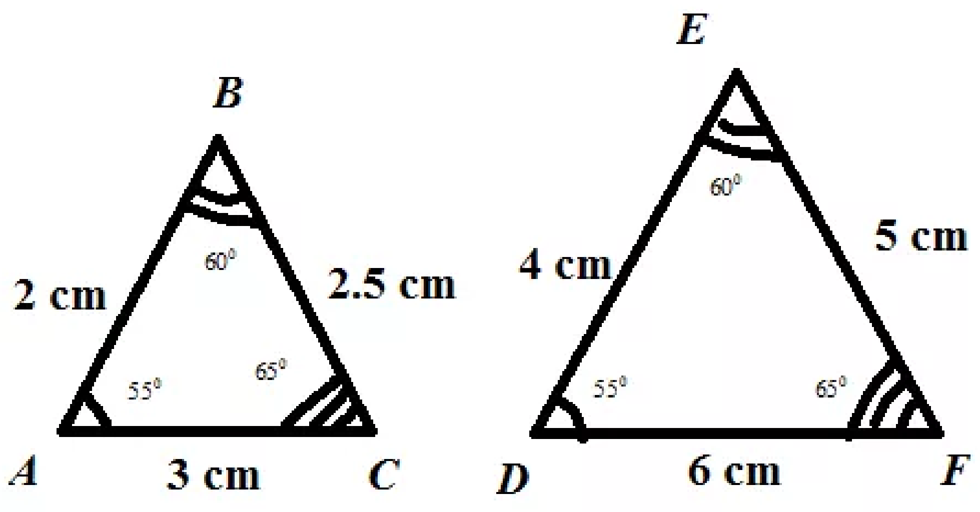
$$c = \pm\sqrt{2500} \quad \left[\begin{array}{l}\text{Take the square root of each} \\ \text{side}\end{array}\right]$$

$$c = \pm 50$$

Therefore, the length of the hypotenuse is $\boxed{50 \text{ units}}$.

Answer 2CU.

The similar triangle ΔABC and ΔDEF are drawn as shown below



Corresponding angles Corresponding sides

$$\begin{array}{ll} & \overline{AB} \text{ and } \overline{DE} \rightarrow \frac{AB}{DE} = \frac{2}{4} = \frac{1}{2} \\ \angle A \text{ and } \angle D & \\ \angle B \text{ and } \angle E & \overline{BC} \text{ and } \overline{EF} \rightarrow \frac{BC}{EF} = \frac{2.5}{5} = \frac{1}{2} \\ \angle C \text{ and } \angle F & \\ & \overline{AC} \text{ and } \overline{DF} \rightarrow \frac{AC}{DF} = \frac{3}{6} = \frac{1}{2} \end{array}$$

Answer 2PQ.

It is given that

$a = 40, c = 41, b = ?$

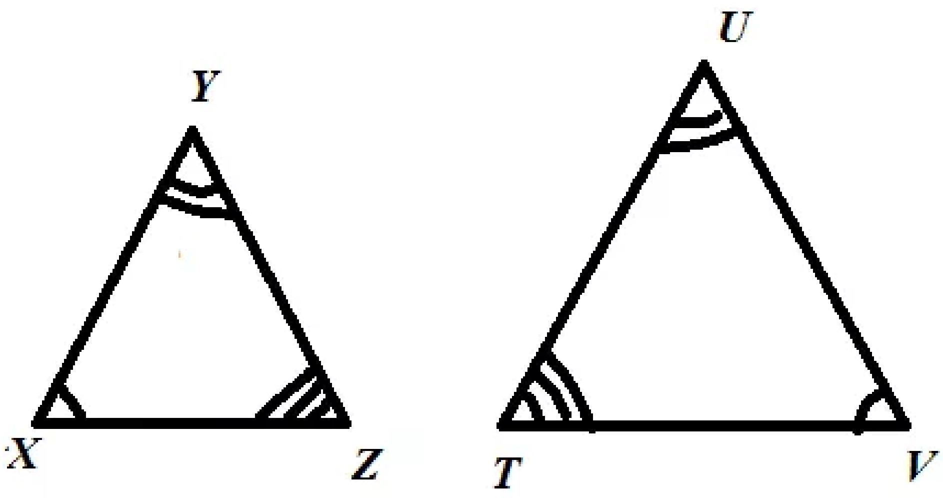
To evaluate the value of b follow step

$$\begin{aligned} c^2 &= a^2 + b^2 && [\text{Pythagorean theorem}] \\ 41^2 &= 40^2 + b^2 && [a = 40, c = 41] \\ 1681 &= 1600 + b^2 && \\ 81 &= b^2 && [\text{Subtract 1600 from both sides}] \\ \pm\sqrt{81} &= b && [\text{Take square root of 81}] \\ \pm 9 &= b && \\ 9 &= b && [\text{Use positive value}] \end{aligned}$$

Therefore, the length of the leg is $\boxed{9 \text{ units}}$.

Answer 3CU.

The similar triangle ΔXYZ and ΔUTV are drawn as shown below



Corresponding angles

$$\angle X = \angle V$$
$$\angle Y = \angle U$$
$$\angle Z = \angle T$$

Consuela comparing similar triangle is correct as Consuela take the same measurement of the triangles with the another triangle.

Answer 3PQ.

It is given that

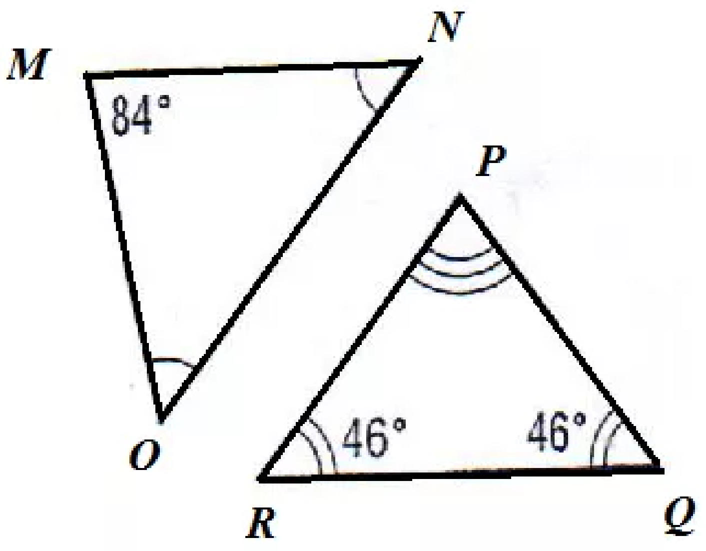
$$b = 8, c = \sqrt{84}, a = ?$$

To evaluate the value of a follow step

$$c^2 = a^2 + b^2 \quad [\text{Pythagorean theorem}]$$
$$\left(\sqrt{84}\right)^2 = a^2 + 8^2 \quad \left[b = 8, c = \sqrt{84}\right]$$
$$84 = a^2 + 64$$
$$20 = a^2 \quad [\text{Subtract 64 from both sides}]$$
$$\pm\sqrt{20} = a \quad [\text{Take square root of 20}]$$
$$\pm 4.47 = a$$
$$4.47 = a \quad [\text{Use positive value}]$$

Therefore, the length of the leg is $\boxed{4.47 \text{ units}}$.

Answer 4CU.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle P$ is $180^0 - (46^0 + 46^0) = 88^0$

In ΔMNO, $\angle N$ and $\angle O$ have the same measure.

Consider $x =$ the measure of $\angle N$ and $\angle O$.

$$x + x + 84^0 = 180^0$$
$$2x = 96^0$$
$$x = 48^0$$

So, $\angle N = 48^0$ and $\angle O = 48^0$. Since the corresponding angles have not equal measures, therefore, the pair of triangles is not similar.

Answer 4PQ.

It is given that

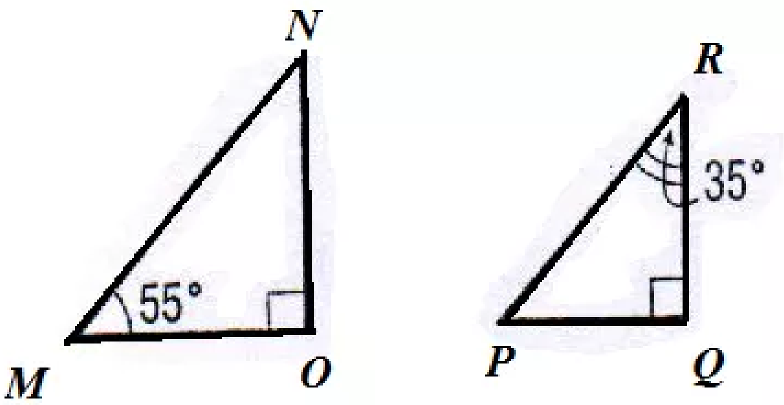
$$a = \sqrt{5}, b = \sqrt{8}, c = ?$$

To evaluate the value of *c* follow step

$$c^2 = a^2 + b^2 \quad \text{[Pythagorean theorem]}$$
$$c^2 = (\sqrt{5})^2 + (\sqrt{8})^2 \quad [a = \sqrt{5}, b = \sqrt{8}]$$
$$c^2 = 5 + 8$$
$$c^2 = 13$$
$$c = \pm\sqrt{13} \quad \text{[Take square root of 13]}$$
$$c = \pm 3.61$$
$$c = 3.61 \quad \text{[Use positive value]}$$

Therefore, the length of the hypotenuse is $\boxed{3.61 \text{ units}}$.

Answer 5CU.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle P$ is $180^0 - \left(35^0 + 90^0\right) = 55^0$

In ΔMNO,

Consider $x =$ the measure of $\angle N$.

$$x + 55^0 + 90^0 = 180^0$$
$$x + 145^0 = 180^0$$
$$x = 180^0 - 145^0$$
$$x = 35^0$$

So, $\angle N = 35^0$ and $\angle R = 35^0$, $\angle M = 55^0$ and $\angle P = 55^0$. Since the corresponding angles have equal measures, therefore, the pair of triangles is similar, $\Delta MNO \sim \Delta PQR$.

Answer 5PQ.

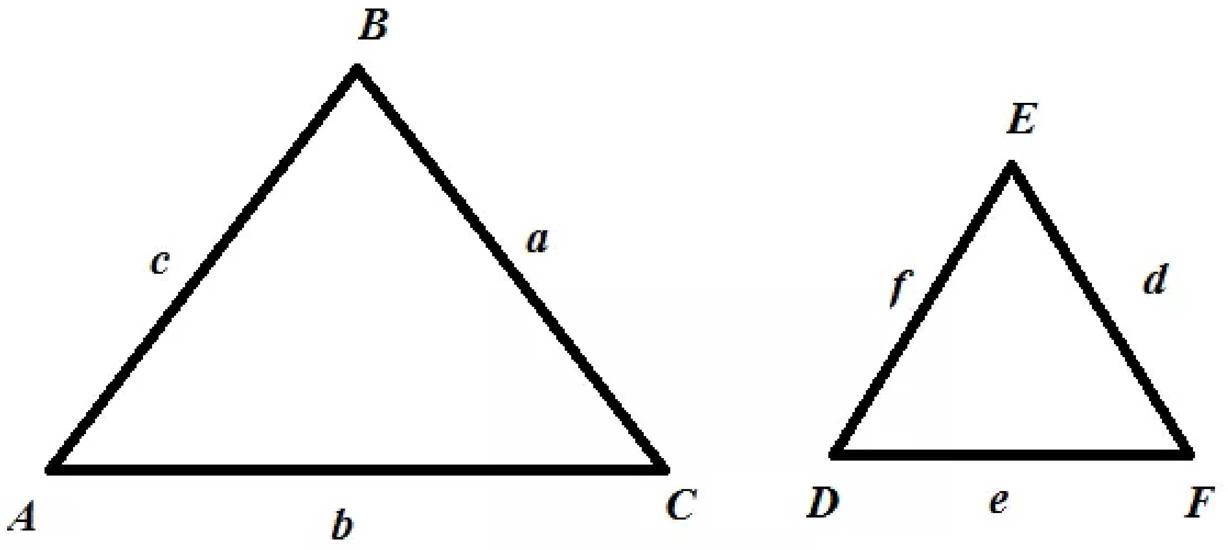
Consider the two points:

$$(6,-12),(-3,3)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-3-(6))^2 + (3-(-12))^2} \\ &= \sqrt{(-9)^2 + (15)^2} \\ &= \sqrt{306} \\ d &\approx \boxed{17.49} \qquad \text{Round to the nearest hundredth} \end{aligned}$$

Answer 6CU.



It is given that

$\Delta ABC \sim \Delta DEF$ and $c = 15, d = 7, e = 9, f = 5$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE} = \frac{BC}{EF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{c}{f} = \frac{a}{d}$$

$$\frac{15}{5} = \frac{a}{7} \quad [c = 15, d = 7, e = 9, f = 5]$$

$$5a = 105 \quad [\text{Find the cross product}]$$

$$a = 21 \quad [\text{Divide each side by } 5]$$

$$\frac{AB}{DE} = \frac{AC}{DF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{c}{f} = \frac{b}{e}$$

$$\frac{15}{5} = \frac{b}{9} \quad [c = 15, d = 7, e = 9, f = 5]$$

$$5b = 135 \quad [\text{Find the cross product}]$$

$$b = 27 \quad [\text{Divide each side by } 5]$$

Therefore, the missing measures are $\boxed{\text{21 and 27}}$.

Answer 6PQ.

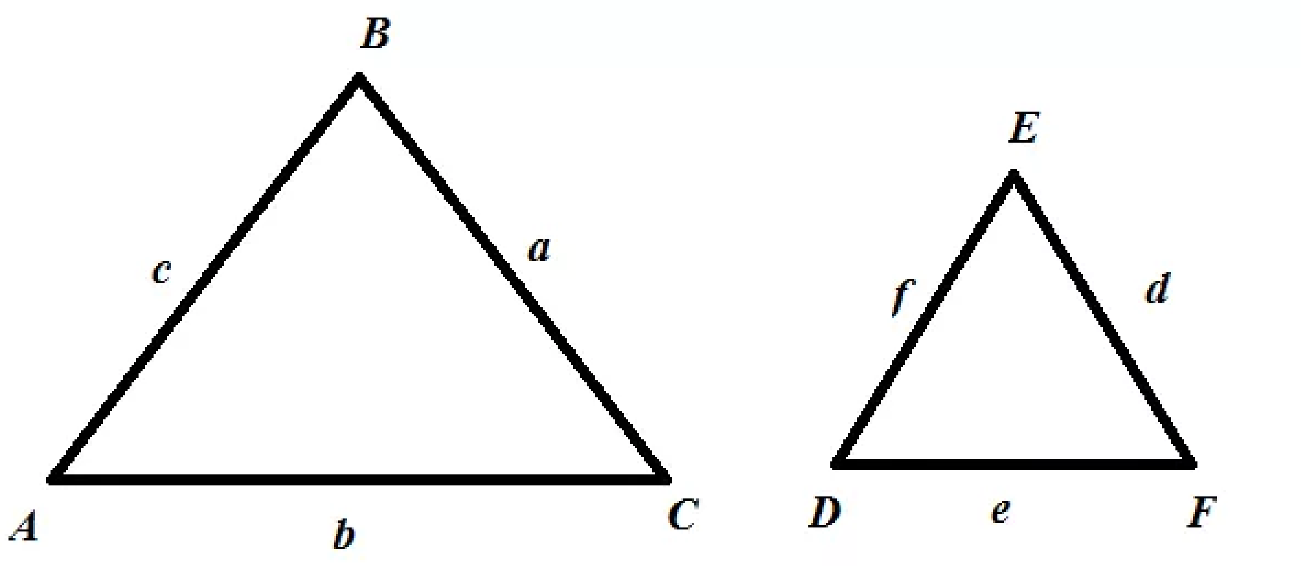
Consider the two points:

$$(1,3),(-5,11)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \\ &= \sqrt{(-5-(1))^2+(11-1)^2} \\ &= \sqrt{(-6)^2+(10)^2} \\ &= \sqrt{136} \\ d &\approx \boxed{11.66} \quad \text{Round to the nearest hundredth} \end{aligned}$$

Answer 7CU.



It is given that

$\Delta ABC \sim \Delta DEF$ and $a=18, c=9, e=10, f=6$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE}=\frac{BC}{EF} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{c}{f}=\frac{a}{d}$$

$$\frac{9}{6}=\frac{18}{d} \quad [a=18, c=9, e=10, f=6]$$

$$9d=108 \quad [\text{Find the cross product}]$$

$$d=12 \quad [\text{Divide each side by } 9]$$

$$\frac{AB}{DE} = \frac{AC}{DF} \quad \begin{bmatrix} \text{Corresponding sides of similar} \\ \text{triangles are proportional} \end{bmatrix}$$

$$\frac{c}{f} = \frac{b}{e}$$

$$\frac{9}{6} = \frac{b}{10} \quad [a = 18, c = 9, e = 10, f = 6]$$

$$6b = 90 \quad [\text{Find the cross product}]$$

$$b = 15 \quad [\text{Divide each side by } 6]$$

Therefore, the missing measures are $\boxed{12 \text{ and } 15}$.

Answer 7PQ.

Consider the two points:

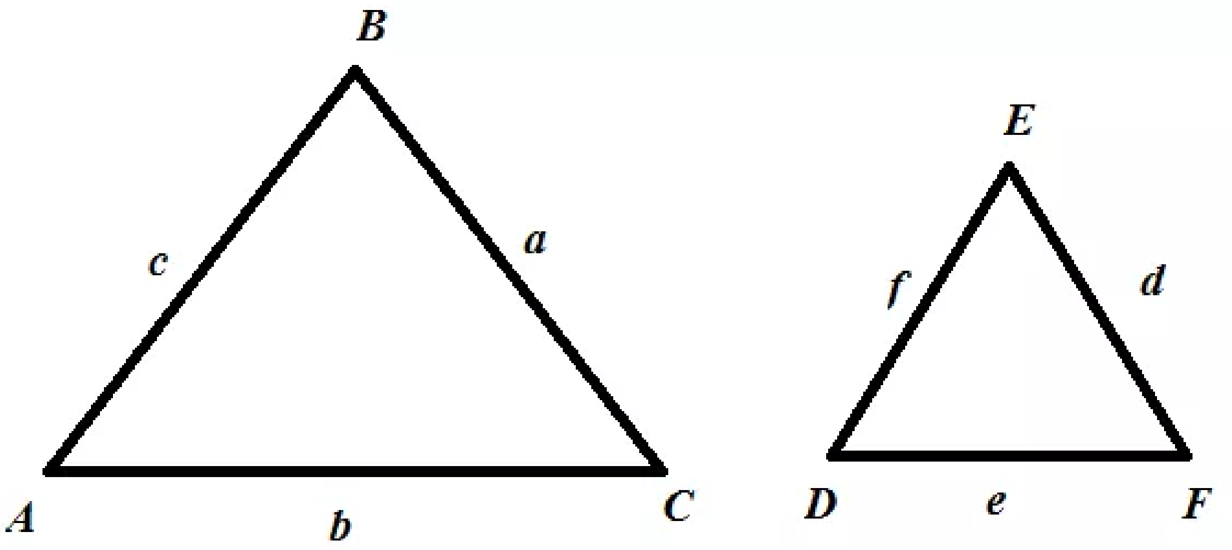
$$(2,5),(4,7)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(4-2)^2 + (7-5)^2} \\ &= \sqrt{(2)^2 + (2)^2} \\ &= \sqrt{8} \end{aligned}$$

$$d \approx \boxed{2.83} \qquad \text{Round to the nearest hundredth}$$

Answer 8CU.



It is given that

$\Delta ABC \sim \Delta DEF$ and $a = 5, d = 7, f = 6, e = 5$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE} = \frac{BC}{EF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{c}{f} = \frac{a}{d}$$

$$\frac{c}{6} = \frac{5}{7} \quad [a = 5, d = 7, f = 6, e = 5]$$

$$7c = 30 \quad [\text{Find the cross product}]$$

$$c = 4.3 \quad [\text{Divide each side by 7}]$$

$$\frac{BC}{EF} = \frac{AC}{DF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{a}{d} = \frac{b}{e}$$

$$\frac{5}{7} = \frac{b}{5} \quad \begin{bmatrix}a = 5, d = 7, \\ f = 6, e = 5\end{bmatrix}$$

$$7b = 25 \quad [\text{Find the cross product}]$$

$$b = 3.58 \quad [\text{Divide each side by 7}]$$

Therefore, the missing measures are $\boxed{\text{4.3 and 3.58}}$.

Answer 8PQ.

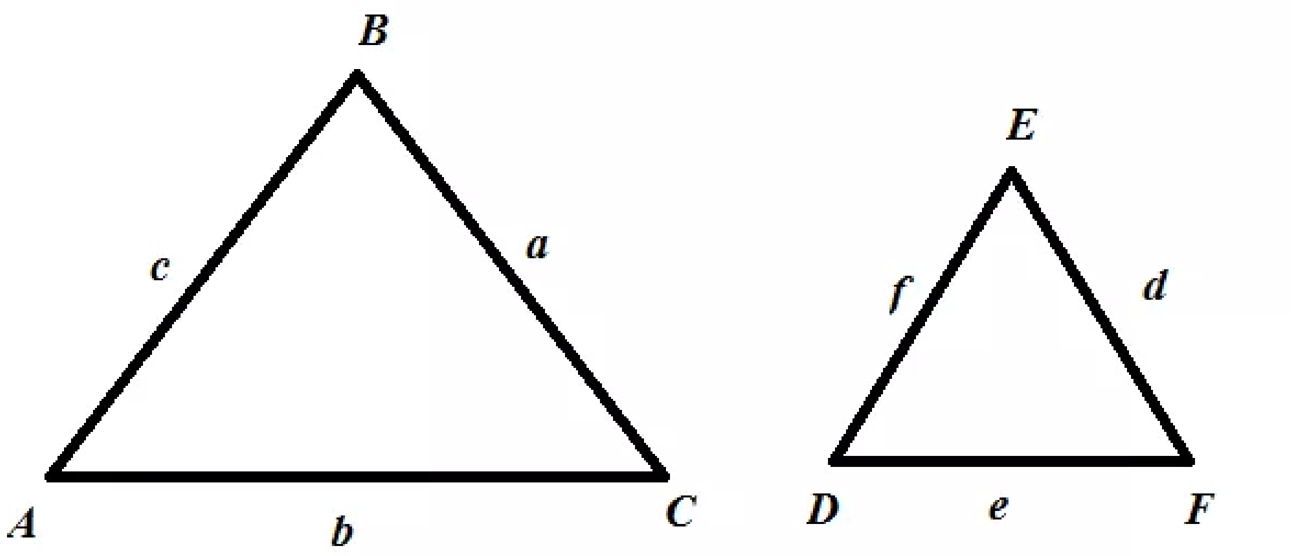
Consider the two points:

$$(-2,-9),(-5,4)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \\ &= \sqrt{((-5)-(-2))^2+(4-(-9))^2} \\ &= \sqrt{(-3)^2+(13)^2} \\ &= \sqrt{178} \\ d &\approx \boxed{13.34} \quad \text{Round to the nearest hundredth} \end{aligned}$$

Answer 9CU.



It is given that

$\Delta ABC \sim \Delta DEF$ and $a=17, b=15, c=10, f=6$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE}=\frac{BC}{EF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{c}{f}=\frac{a}{d}$$

$$\frac{10}{6}=\frac{17}{d} \quad [a=17, b=15, c=10, f=6]$$

$$10d=102 \quad [\text{Find the cross product}]$$

$$d=10.2 \quad [\text{Divide each side by } 10]$$

$$\frac{AB}{DE} = \frac{AC}{DF} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{c}{f} = \frac{b}{e}$$

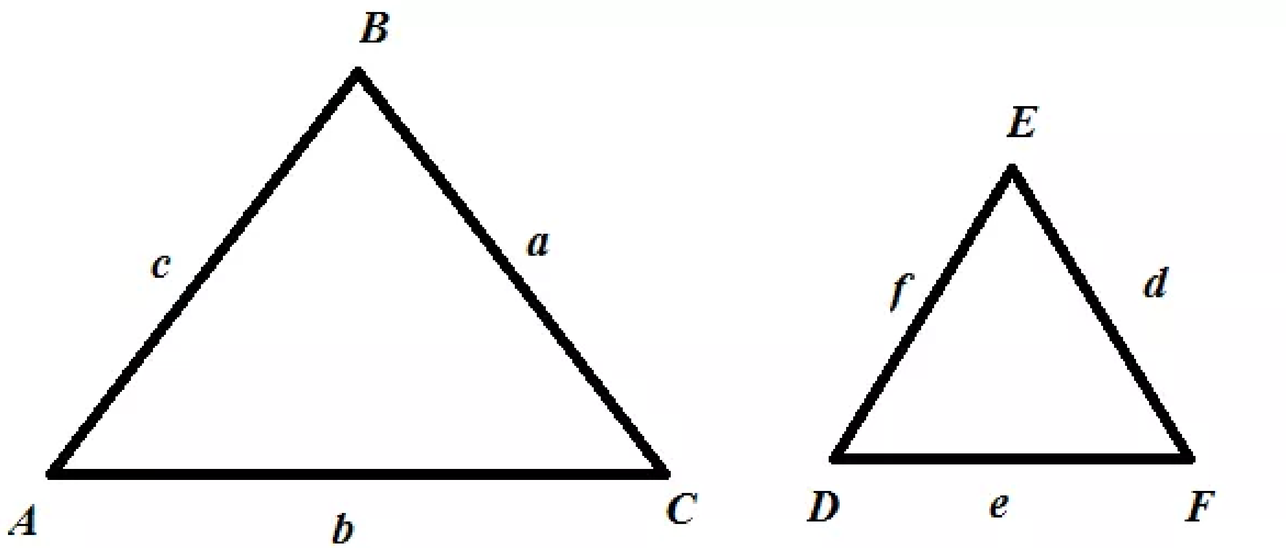
$$\frac{10}{6} = \frac{15}{e} \quad [a = 17, b = 15, c = 10, f = 6]$$

$$10e = 90 \quad [\text{Find the cross product}]$$

$$e = 9 \quad [\text{Divide each side by } 10]$$

Therefore, the missing measures are $\boxed{10.2 \text{ and } 9}$.

Answer 9PQ.



It is given that

$$\Delta ABC \sim \Delta EFD$$

$$b = 10, d = 2, e = 1, f = 1.5$$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE} = \frac{AC}{DF} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{c}{f} = \frac{b}{e}$$

$$\frac{c}{1.5} = \frac{10}{1} \quad [b = 10, d = 2, e = 1, f = 1.5]$$

$$c = 15 \quad [\text{Find the cross product}]$$

$$\frac{BC}{EF}=\frac{AC}{DF} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

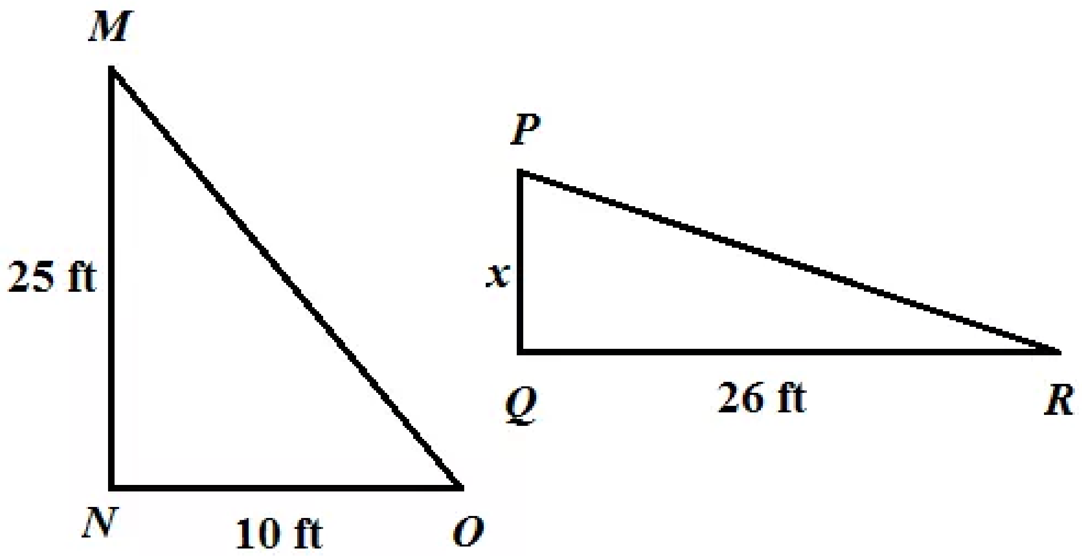
$$\frac{a}{d}=\frac{b}{e}$$

$$\frac{a}{2}=\frac{10}{1} \quad [b=10, d=2, e=1, f=1.5]$$

$$a=20 \quad [\text{Find the cross product}]$$

Therefore, the missing measures are $\boxed{\text{15 and 20}}$.

Answer 10CU.



Consider the height of the building is x ft.

Since $\Delta MNO \sim \Delta PQR$, it can be written as

$$\frac{MN}{PQ}=\frac{NO}{QR} \quad \left[\begin{array}{l}\text{Corresponding sides of} \\ \text{similar triangles are} \\ \text{proportional}\end{array}\right]$$

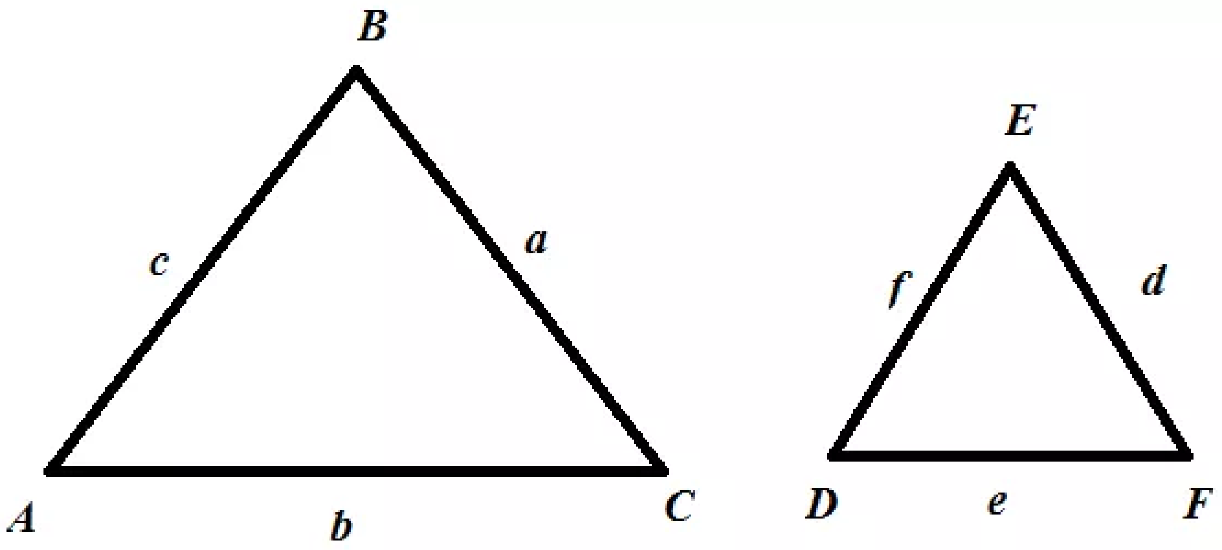
$$\frac{25}{x}=\frac{10}{26}$$

$$10x=650 \quad [\text{Find the cross product}]$$

$$x=65 \quad [\text{Divide both side by 10}]$$

Therefore, the height of the building is $\boxed{\text{65 ft}}$.

Answer 10PQ.



It is given that

$\Delta ABC \sim \Delta EFD$

$a = 12, c = 9, d = 8, e = 12$

Since the corresponding angles have equal measures, $\Delta ABC \sim \Delta DEF$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{DE} = \frac{BC}{EF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{c}{f} = \frac{a}{d}$$

$$\frac{9}{f} = \frac{12}{8} \quad [a = 12, c = 9, d = 8, e = 12]$$

$$12f = 72 \quad [\text{Find the cross product}]$$

$$f = 6 \quad [\text{Divide both sides by } 12]$$

$$\frac{BC}{EF} = \frac{AC}{DF} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{a}{d} = \frac{b}{e}$$

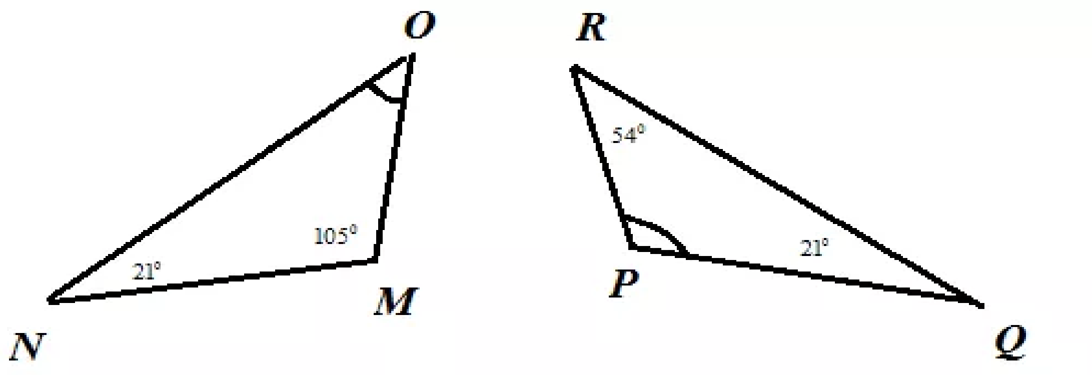
$$\frac{12}{8} = \frac{b}{12} \quad [a = 12, c = 9, d = 8, e = 12]$$

$$8b = 144 \quad [\text{Find the cross product}]$$

$$b = 18 \quad [\text{Divide both sides by } 8]$$

Therefore, the missing measures are $\boxed{\text{6 and 18}}$.

Answer 11PA.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle P$ is $180^0 - (54^0 + 21^0) = 105^0$

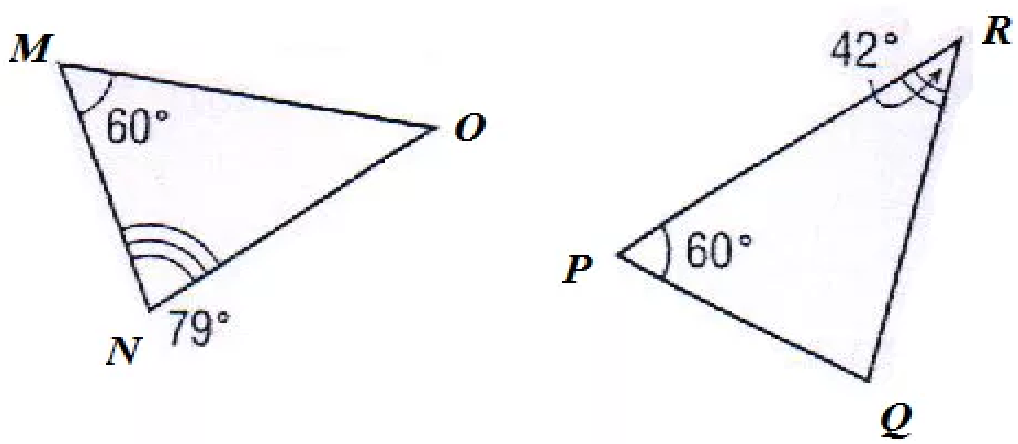
In ΔMNO,

Consider $x =$ the measure of $\angle O$.

$$x + 105^0 + 21^0 = 180^0$$
$$x + 126^0 = 180^0$$
$$x = 180^0 - 126^0$$
$$x = 54^0$$

So, $\angle N = 21^0$ and $\angle Q = 21^0$, $\angle M = 105^0$ and $\angle P = 105^0$, $\angle O = 54^0$ and $\angle R = 54^0$. Since the corresponding angles have equal measures, therefore, the pair of triangles is similar, $\Delta MNO \sim \Delta PQR$.

Answer 12PA.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle Q$ is $180^0 - (60^0 + 42^0) = 78^0$

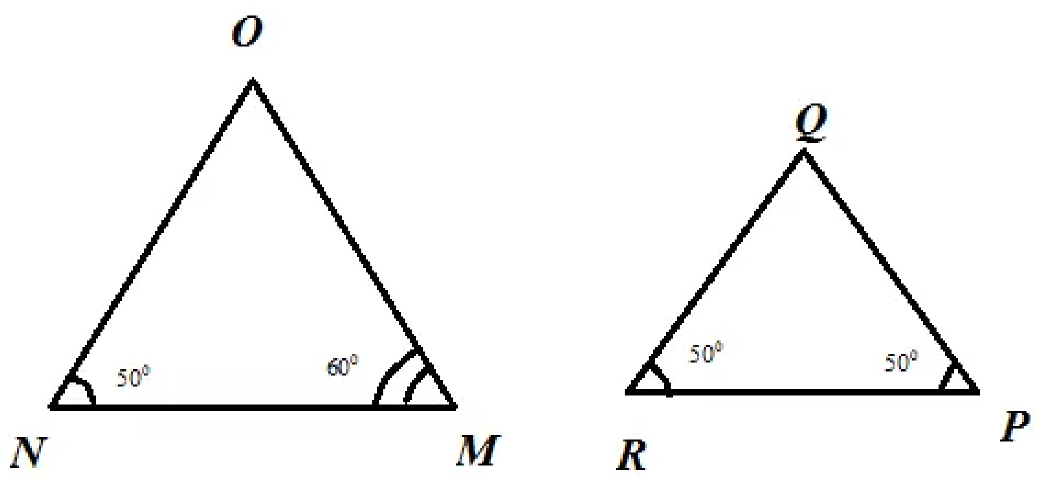
In ΔMNO,

Consider $x =$ the measure of $\angle O$.

$$x + 60^0 + 79^0 = 180^0$$
$$x + 139^0 = 180^0$$
$$x = 180^0 - 139^0$$
$$x = 41^0$$

So, $\angle N = 79^0$ and $\angle Q = 78^0$, $\angle M = 60^0$ and $\angle P = 60^0$, $\angle O = 41^0$ and $\angle R = 42^0$. Since the corresponding angles have not equal measures, therefore, the pair of triangles is not similar.

Answer 13PA.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle Q$ is $180^0 - (50^0 + 50^0) = 80^0$

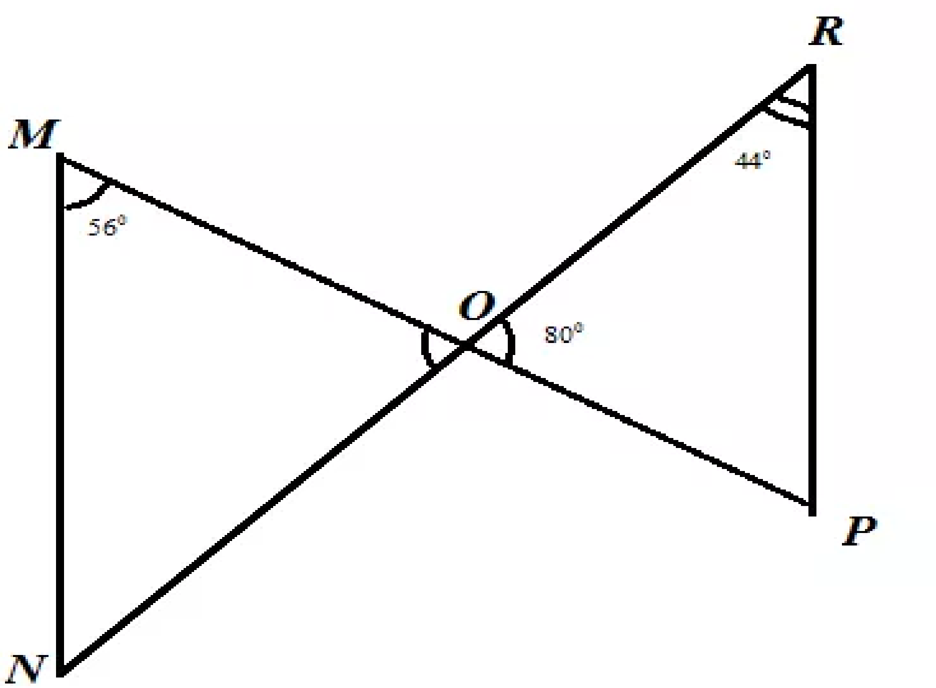
In ΔMNO,

Consider $x =$ the measure of $\angle O$.

$$x + 60^0 + 50^0 = 180^0$$
$$x + 110^0 = 180^0$$
$$x = 180^0 - 110^0$$
$$x = 70^0$$

So, $\angle M = 60^0$ and $\angle P = 50^0$, $\angle N = 50^0$ and $\angle R = 50^0$, $\angle O = 70^0$ and $\angle Q = 80^0$. Since the corresponding angles have not equal measures, therefore, the pair of triangles is not similar.

Answer 14PA.



The sum of the measure of the angles in a triangle is 180^0.

Since $\angle MON = \angle POR$ [Opposite angle], so $\angle MON = \angle POR = 80^0$.

The measure of $\angle P$ is $180^0 - (80^0 + 44^0) = 56^0$

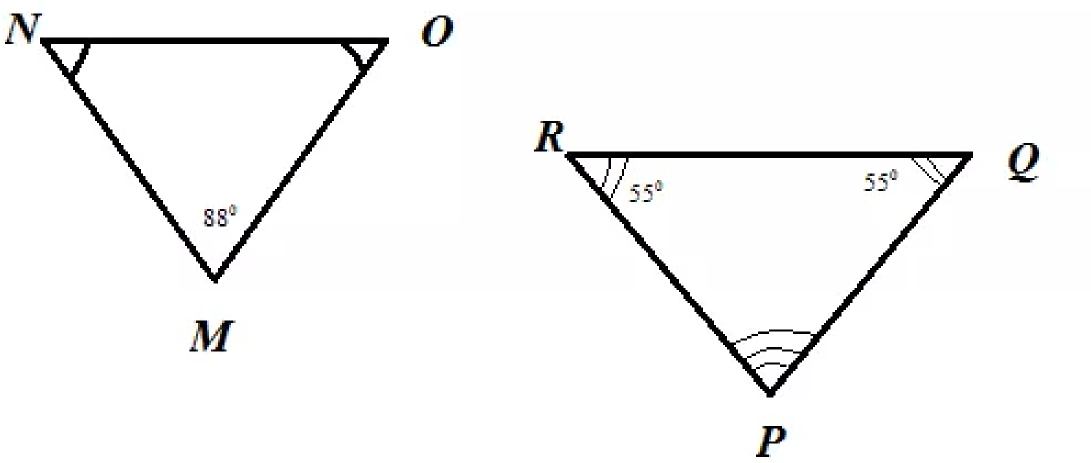
In ΔMNO,

Consider $x =$the measure of $\angle N$.

$$x + 80^0 + 56^0 = 180^0$$
$$x + 136^0 = 180^0$$
$$x = 180^0 - 136^0$$
$$x = 44^0$$

So, $\angle M = 56^0$ and $\angle P = 56^0$, $\angle N = 44^0$ and $\angle R = 44^0$, $\angle MON = 80^0$ and $\angle POR = 80^0$. Since the corresponding angles have equal measures, therefore, the pair of triangles is similar.

Answer 15PA.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle P$is $180^0 - (55^0 + 55^0) = 70^0$

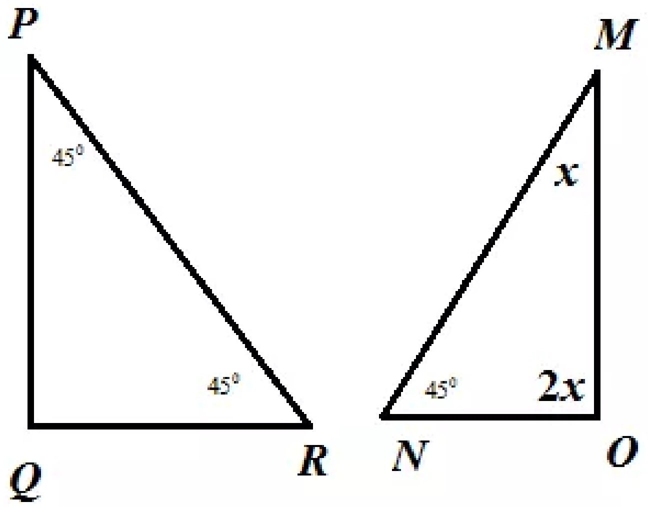
In ΔMNO, $\angle N$ and $\angle O$ have equal measure.

Consider $x =$the measure of $\angle N$ and $\angle O$.

$$x + x + 88^0 = 180^0$$
$$2x + 88^0 = 180^0$$
$$2x = 92^0$$
$$x = 46^0$$

So, $\angle M = 88^0$ and $\angle P = 70^0$, $\angle N = 46^0$ and $\angle R = 55^0$, $\angle O = 46^0$ and $\angle Q = 55^0$. Since the corresponding angles have not equal measures, therefore, the pair of triangles is not similar.

Answer 16PA.



The sum of the measure of the angles in a triangle is 180^0.

The measure of $\angle Q$ is $180^0 - \left(45^0 + 45^0\right) = 90^0$

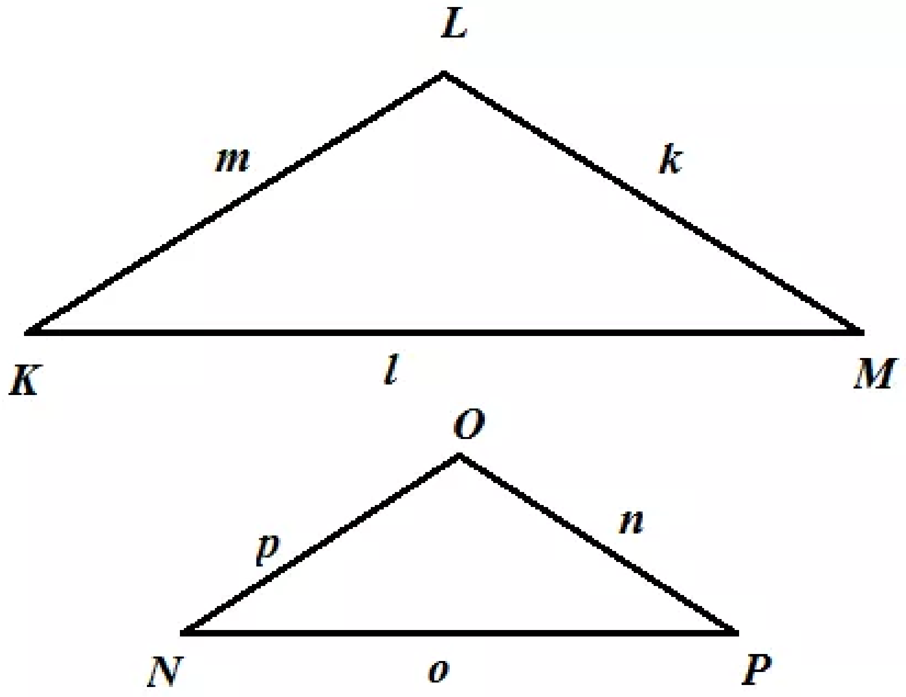
In ΔMNO,

Consider $x =$the measure of $\angle M$.

$$x + 2x + 45^0 = 180^0$$
$$3x + 45^0 = 180^0$$
$$3x = 135^0$$
$$x = 45^0$$

So, $\angle M = 45^0$ and $\angle P = 45^0$, $\angle N = 45^0$ and $\angle R = 45^0$, $\angle O = 90^0$ and $\angle Q = 90^0$. Since the corresponding angles have equal measures, therefore, the pair of triangles is similar.

Answer 17PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $k=9, n=6, o=8, p=4$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO}=\frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar}\\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{m}{p}=\frac{k}{n}$$

$$\frac{m}{4}=\frac{9}{6} \quad [k=9, n=6, o=8, p=4]$$

$$6m=36 \quad [\text{Find the cross product}]$$

$$m=6 \quad [\text{Divide each side by } 6]$$

$$\frac{KM}{NP}=\frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar}\\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{l}{o}=\frac{k}{n}$$

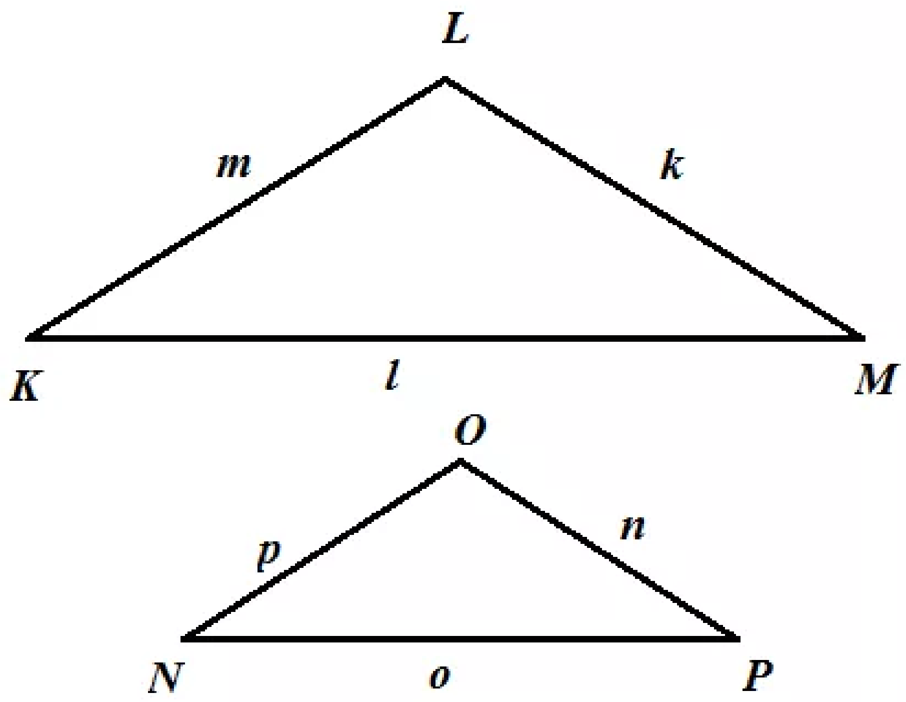
$$\frac{l}{8}=\frac{9}{6} \quad [k=9, n=6, o=8, p=4]$$

$$6l=72 \quad [\text{Find the cross product}]$$

$$l=12 \quad [\text{Divide each side by } 6]$$

Therefore, the missing measures are $\boxed{\text{6 and 12}}$.

Answer 18PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO} = \frac{LM}{OP} \quad \begin{bmatrix} \text{Corresponding sides of similar} \\ \text{triangles are proportional} \end{bmatrix}$$

$$\frac{m}{p} = \frac{k}{n}$$

$$\frac{15}{p} = \frac{24}{16} \quad [k = 24, l = 30, m = 15, n = 16]$$

$$24p = 240 \quad [\text{Find the cross product}]$$

$$p = 10 \quad [\text{Divide each side by } 24]$$

$$\frac{KM}{NP} = \frac{LM}{OP} \quad \begin{bmatrix} \text{Corresponding sides of similar} \\ \text{triangles are proportional} \end{bmatrix}$$

$$\frac{l}{o} = \frac{k}{n}$$

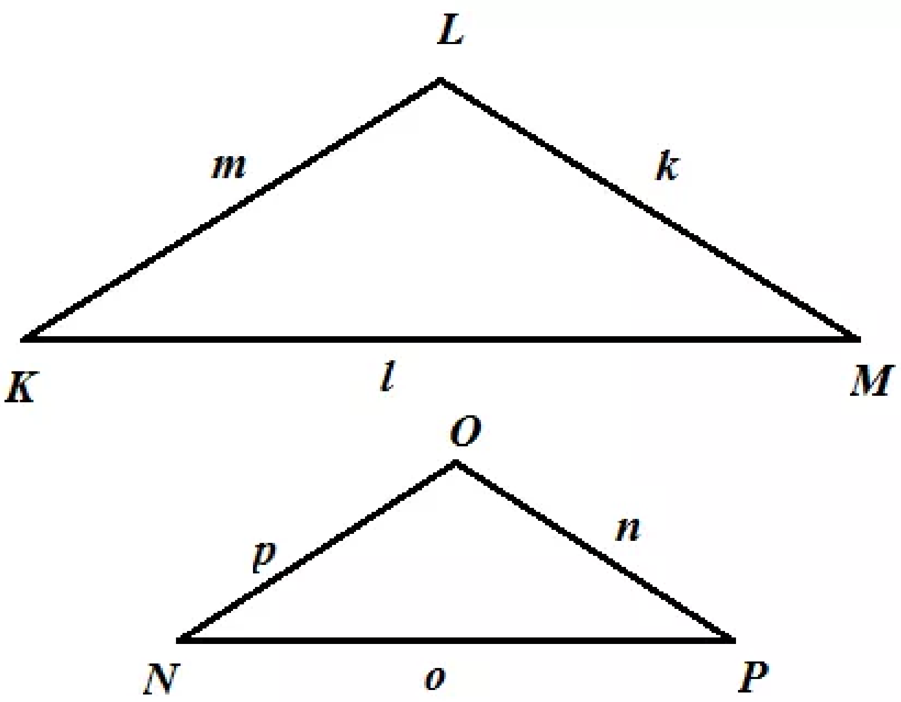
$$\frac{30}{o} = \frac{24}{16} \quad [k = 24, l = 30, m = 15, n = 16]$$

$$24o = 480 \quad [\text{Find the cross product}]$$

$$o = 20 \quad [\text{Divide each side by } 24]$$

Therefore, the missing measures are $\boxed{10 \text{ and } 20}$.

Answer 19PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $m = 11, p = 6, n = 5, o = 4$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO} = \frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{m}{p} = \frac{k}{n}$$

$$\frac{11}{6} = \frac{k}{5} \quad [m = 11, p = 6, n = 5, o = 4]$$

$$6k = 55 \quad [\text{Find the cross product}]$$

$$k = 9.2 \quad [\text{Divide each side by 6}]$$

$$\frac{KM}{NP} = \frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{l}{o} = \frac{k}{n}$$

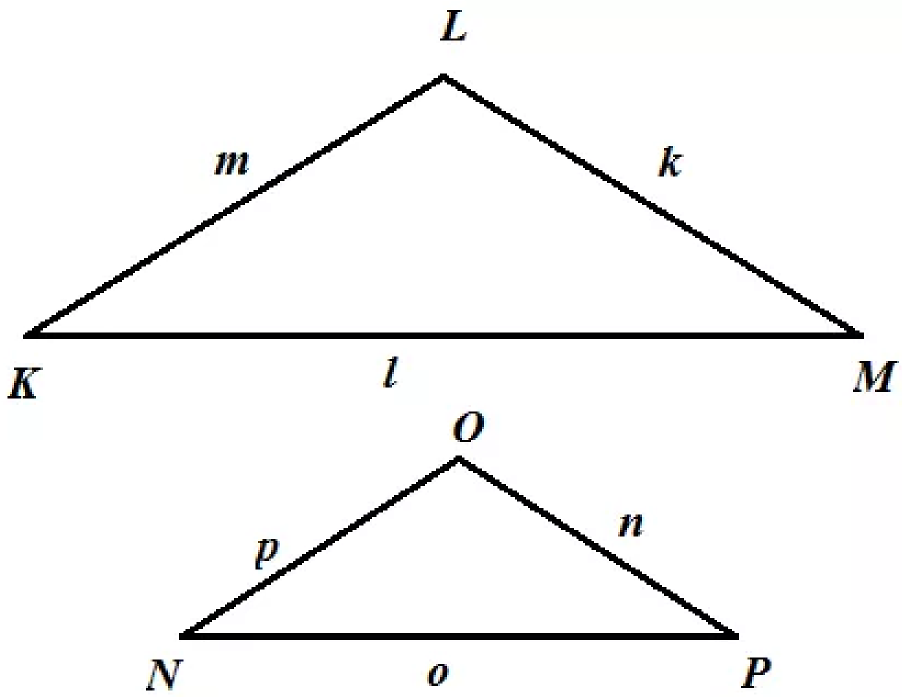
$$\frac{l}{4} = \frac{9.2}{5} \quad [k = 9.2, m = 11, p = 6, n = 5, o = 4]$$

$$5l = 36.8 \quad [\text{Find the cross product}]$$

$$l = 7.4 \quad [\text{Divide each side by 5}]$$

Therefore, the missing measures are $\boxed{9.2 \text{ and } 7.4}$.

Answer 20PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $k=16, l=13, m=12, o=7$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO}=\frac{KM}{NP} \quad \left[\begin{array}{l}\text{Corresponding sides of similar}\\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{m}{p}=\frac{l}{o}$$

$$\frac{12}{p}=\frac{13}{7} \quad [k=16, l=13, m=12, o=7]$$

$$13p=84 \quad [\text{Find the cross product}]$$

$$p=6.5 \quad [\text{Divide each side by 13}]$$

$$\frac{KM}{NP}=\frac{LM}{OP} \quad \left[\begin{array}{l}\text{Corresponding sides of similar}\\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{l}{o}=\frac{k}{n}$$

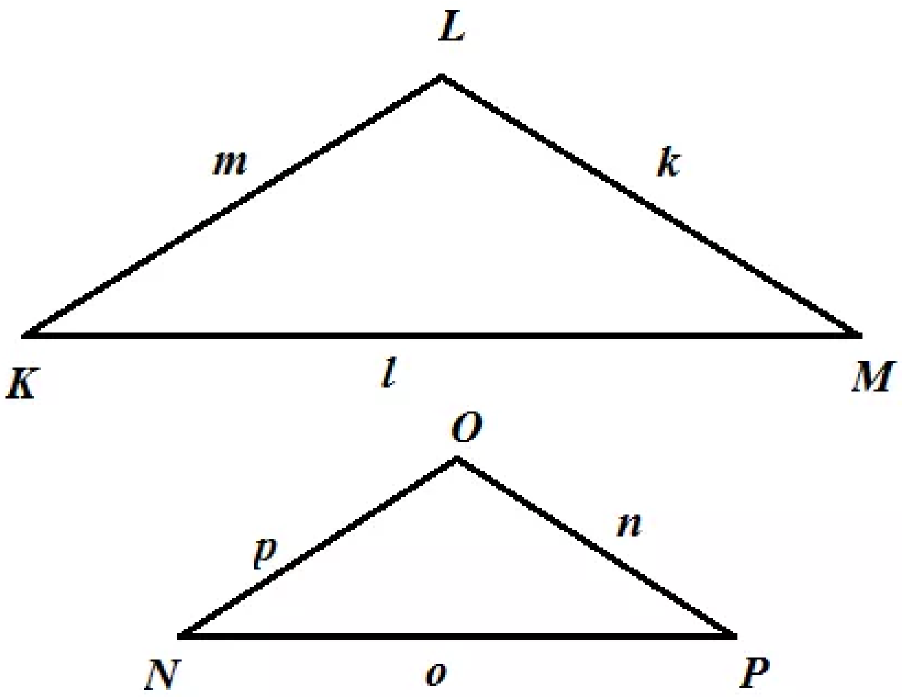
$$\frac{13}{7}=\frac{16}{n} \quad [k=16, l=13, m=12, o=7]$$

$$13n=112 \quad [\text{Find the cross product}]$$

$$n=8.6 \quad [\text{Divide each side by 13}]$$

Therefore, the missing measures are $\boxed{6.5 \text{ and } 8.6}$.

Answer 21PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $n = 6, p = 2.5, l = 4, m = 1.25$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO} = \frac{LM}{OP} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{m}{p} = \frac{k}{n}$$

$$\frac{1.25}{2.5} = \frac{k}{6} \quad [n = 6, p = 2.5, l = 4, m = 1.25]$$

$$2.5k = 7.5 \quad [\text{Find the cross product}]$$

$$k = 3 \quad [\text{Divide each side by } 2.5]$$

$$\frac{KM}{NP} = \frac{LM}{OP} \quad \left[\begin{array}{l}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{array}\right]$$

$$\frac{l}{o} = \frac{k}{n}$$

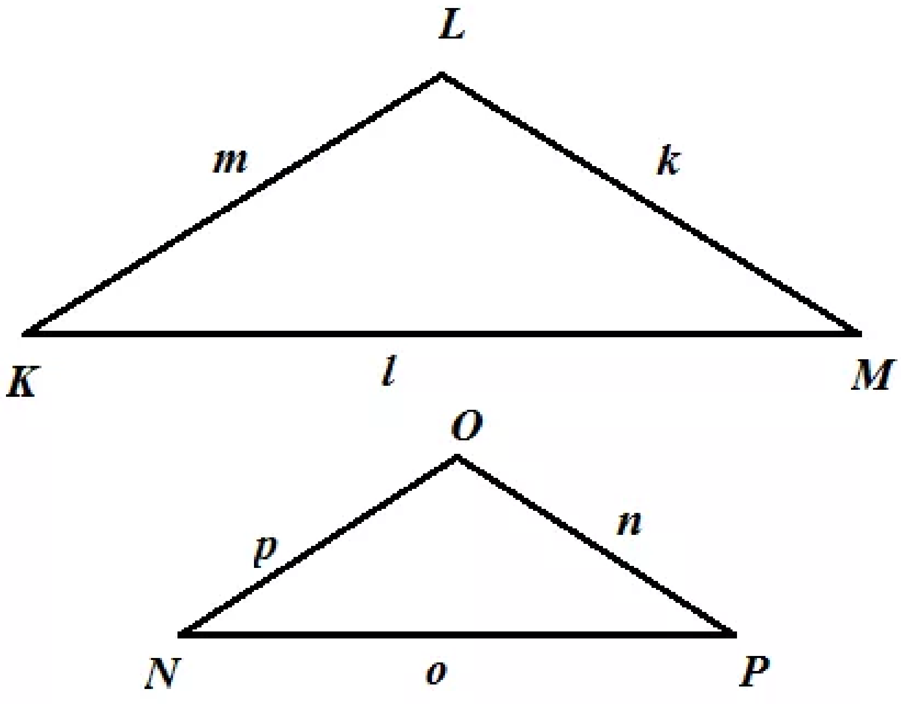
$$\frac{4}{o} = \frac{3}{6} \quad [k = 3, n = 6, p = 2.5, l = 4, m = 1.25]$$

$$3o = 24 \quad [\text{Find the cross product}]$$

$$o = 8 \quad [\text{Divide each side by } 5]$$

Therefore, the missing measures are $\boxed{\text{3 and 8}}$.

Answer 22PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $p=5, k=10.5, l=15, m=7.5$

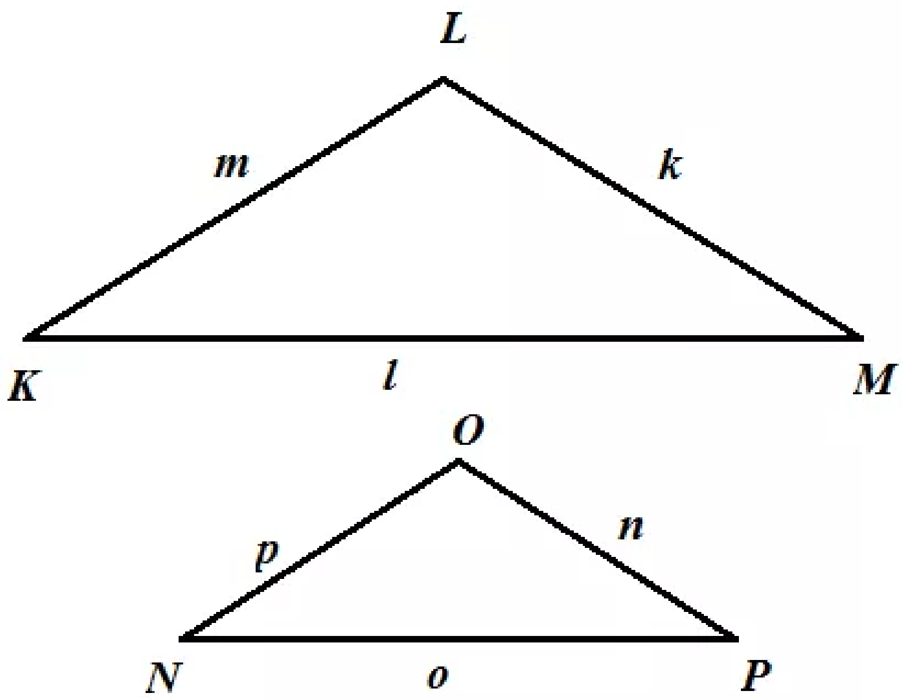
Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO}=\frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$
$$\frac{m}{p}=\frac{k}{n}$$
$$\frac{7.5}{5}=\frac{10.5}{n} \quad [p=5, k=10.5, l=15, m=7.5]$$
$$7.5n=52.5 \quad [\text{Find the cross product}]$$
$$n=7 \quad [\text{Divide each side by } 7.5]$$

$$\frac{KM}{NP}=\frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$
$$\frac{l}{o}=\frac{k}{n}$$
$$\frac{15}{o}=\frac{10}{7} \quad [n=7, p=5, k=10.5, l=15, m=7.5]$$
$$10o=105 \quad [\text{Find the cross product}]$$
$$o=10.5 \quad [\text{Divide each side by } 10]$$

Therefore, the missing measures are $\boxed{\text{7 and 10.5}}$.

Answer 23PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $n = 2.1, l = 4.4, p = 2.7, o = 3.3$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO} = \frac{KM}{NP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{m}{p} = \frac{l}{o}$$

$$\frac{m}{2.7} = \frac{4.4}{3.3} \quad [n = 2.1, l = 4.4, p = 2.7, o = 3.3]$$

$$3.3m = 11.88 \quad [\text{Find the cross product}]$$

$$n = 3.6 \quad [\text{Divide each side by } 3.3]$$

$$\frac{KM}{NP} = \frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{l}{o} = \frac{k}{n}$$

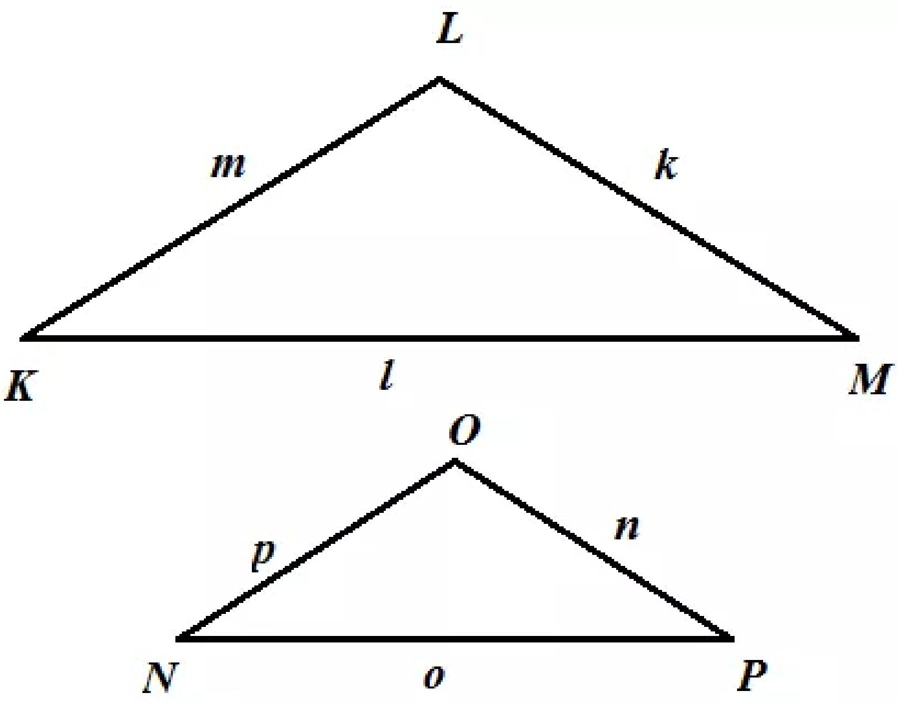
$$\frac{4.4}{3.3} = \frac{k}{2.1} \quad [n = 2.1, l = 4.4, p = 2.7, o = 3.3]$$

$$3.3k = 105 \quad [\text{Find the cross product}]$$

$$k = 31.8 \quad [\text{Divide each side by } 3.3]$$

Therefore, the missing measures are $\boxed{\text{3.6 and 31.8}}$.

Answer 24PA.



It is given that

$\Delta KLM \sim \Delta NOP$ and $m = 5, k = 12.6, o = 8.1, p = 2.5$

Since the corresponding angles have equal measures, $\Delta KLM \sim \Delta NOP$. The lengths of the corresponding sides are proportional.

$$\frac{KL}{NO} = \frac{KM}{NP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{m}{p} = \frac{l}{o}$$

$$\frac{5}{2.5} = \frac{l}{8.1} \quad [m = 5, k = 12.6, o = 8.1, p = 2.5]$$

$$2.5l = 40.5 \quad [\text{Find the cross product}]$$

$$l = 16.2 \quad [\text{Divide each side by } 2.5]$$

$$\frac{KM}{NP} = \frac{LM}{OP} \quad \begin{bmatrix}\text{Corresponding sides of similar} \\ \text{triangles are proportional}\end{bmatrix}$$

$$\frac{l}{o} = \frac{k}{n}$$

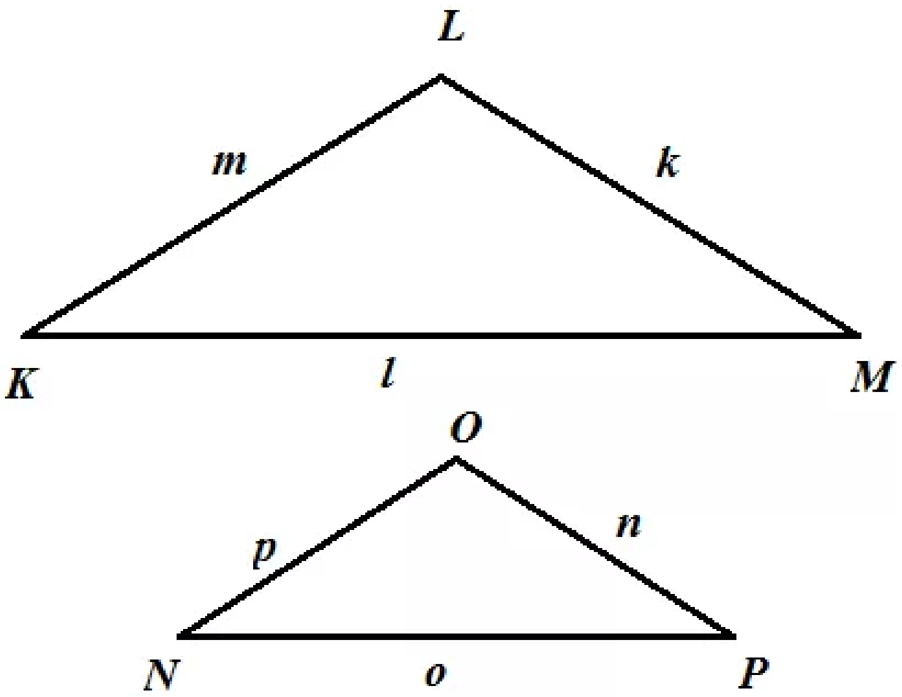
$$\frac{16.2}{8.1} = \frac{12.6}{n} \quad [l = 16.2, m = 5, k = 12.6, o = 8.1, p = 2.5]$$

$$16.2n = 102.06 \quad [\text{Find the cross product}]$$

$$n = 6.3 \quad [\text{Divide each side by } 3.3]$$

Therefore, the missing measures are $\boxed{16.2 \text{ and } 6.3}$.

Answer 25PA.



It is given that

$$m = 3p, k = 3n, o = 3l$$

Corresponding sides

$$\overline{NO} \text{ and } \overline{KL} \to \frac{NO}{KL} = \frac{p}{m} = \frac{p}{3p} = \frac{1}{3}$$

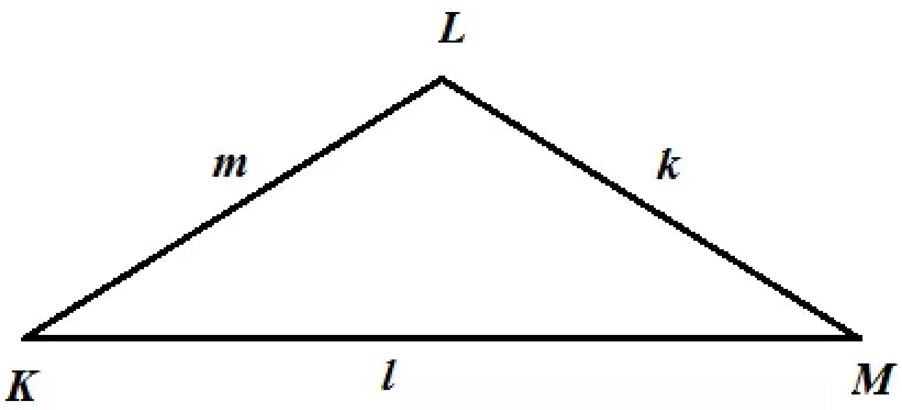
$$\overline{LM} \text{ and } \overline{OP} \to \frac{OP}{LM} = \frac{n}{k} = \frac{n}{3n} = \frac{1}{3}$$

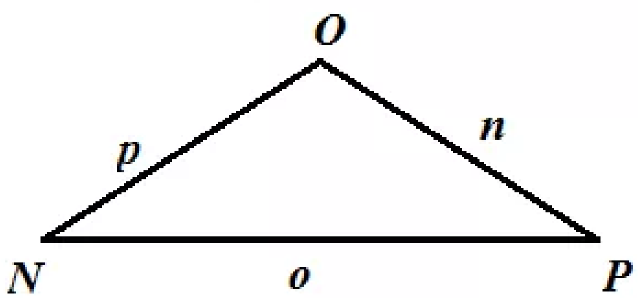
$$\overline{KM} \text{ and } \overline{NP} \to \frac{NP}{KM} = \frac{o}{l} = \frac{o}{3o} = \frac{1}{3}$$

If the measures of the sides of two triangles form equal ratios, or are proportional, then the triangles are similar.

$$\Delta KLM \sim \Delta NOP$$

Therefore, the statement is $\boxed{\text{always}}$ true.





It is given that

$$m = 3p, k = 3n, o = 3l$$

Corresponding sides

$$\overline{NO} \text{ and } \overline{KL} \rightarrow \frac{NO}{KL} = \frac{p}{m} = \frac{p}{3p} = \frac{1}{3}$$

$$\overline{LM} \text{ and } \overline{OP} \rightarrow \frac{OP}{LM} = \frac{n}{k} = \frac{n}{3n} = \frac{1}{3}$$

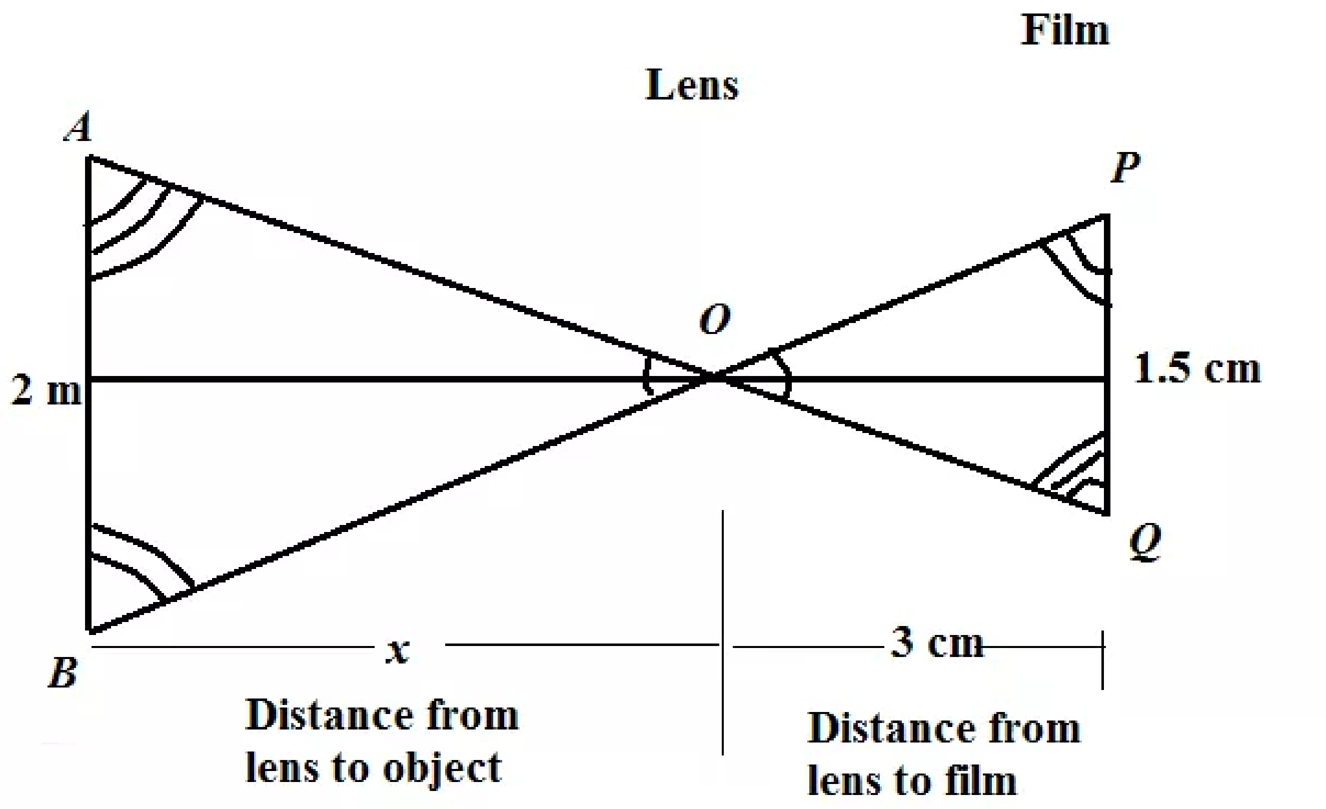
$$\overline{KM} \text{ and } \overline{NP} \rightarrow \frac{NP}{KM} = \frac{o}{l} = \frac{o}{3o} = \frac{1}{3}$$

If the measures of the sides of two triangles form equal ratios, or are proportional, then the triangles are similar.

$$\Delta KLM \sim \Delta NOP$$

Therefore, the statement is $\boxed{\text{always}}$ true.

Answer 26PA.



Since the corresponding angles of the given figure are in equal measure so, the triangles *ABO* and *PQO* are similar.

$$\angle A = \angle Q$$
$$\angle P = \angle B$$
$$\angle AOB = \angle POQ$$

Now, $\Delta ABO \sim \Delta PQO$

If two triangles are similar, then their corresponding angle sides are in proportional.

$$\frac{200}{1.5} = \frac{x}{3} \qquad [2 \text{ m} = 200 \text{ cm}]$$
$$1.5x = 600$$
$$x = 400$$

Therefore, the distance from the lens to man is $\boxed{400 \text{ cm or } 4 \text{ m}}$.

Answer 27PA.

It is given that

The model of a truss bridge in the scale measurement is

$1 \text{ in.} = 12 \text{ feet}$

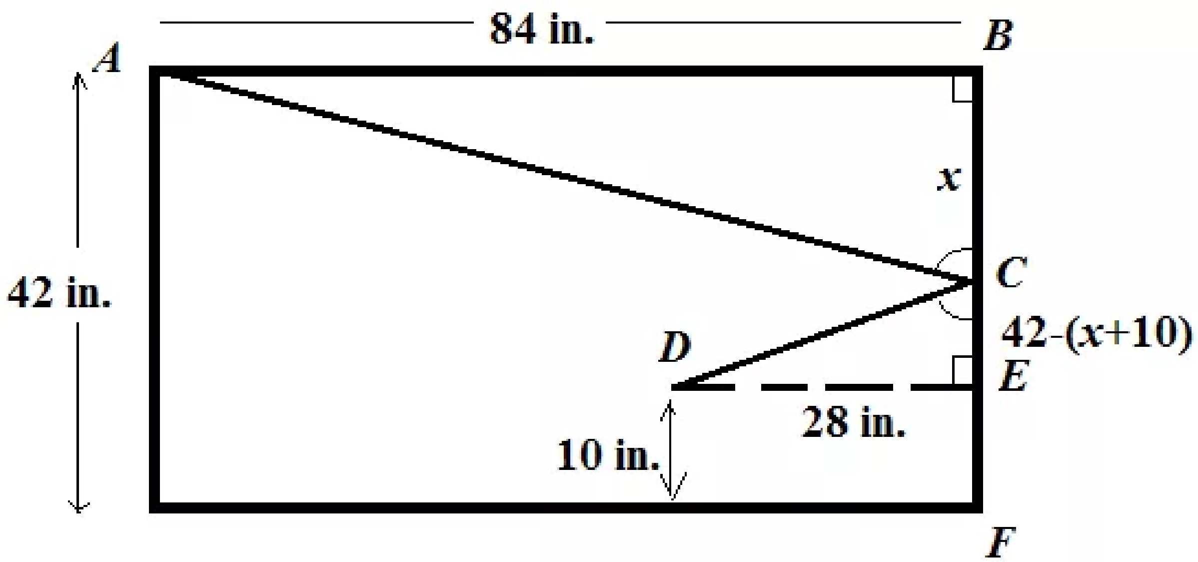
The height of the triangles on the actual bridge is 40 feet.

Now, the height on that model can be calculated as

$$12 \text{ feet} = 1 \text{ in.}$$
$$1 \text{ feet} = \frac{1}{12} \text{ in.}$$
$$40 \text{ feet} = \left(\frac{1}{12} \times 40\right) \text{ in.}$$
$$= 3.\bar{3} \text{ in.}$$

Therefore, the height on the model is $\boxed{3.\bar{3} \text{ in.}}$

Answer 28PA.



Consider the triangles *ABC* and *CDE*

$$\angle B = \angle E$$
$$\angle ACB = \angle DCE$$

If the angles of one triangle and the corresponding angles of a second triangle have equal measures, then the triangles are similar.

Thus,

$$\Delta ABC \sim \Delta CDE$$

Since triangles are similar so,

$$\frac{AB}{DE} = \frac{BC}{CE}$$

$$\frac{84}{28} = \frac{x}{42-(x+10)}$$

$$3 = \frac{x}{32-x}$$

$$96-3x = x$$

$$96 = 4x$$

$$\frac{96}{4} = x$$

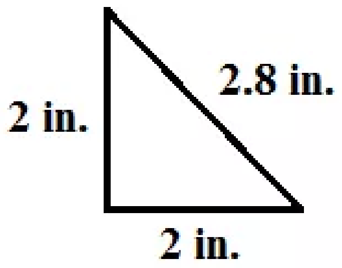
$$24 = x$$

Therefore, Leno's ball should strike the rail in $\boxed{24\text{ in.}}$

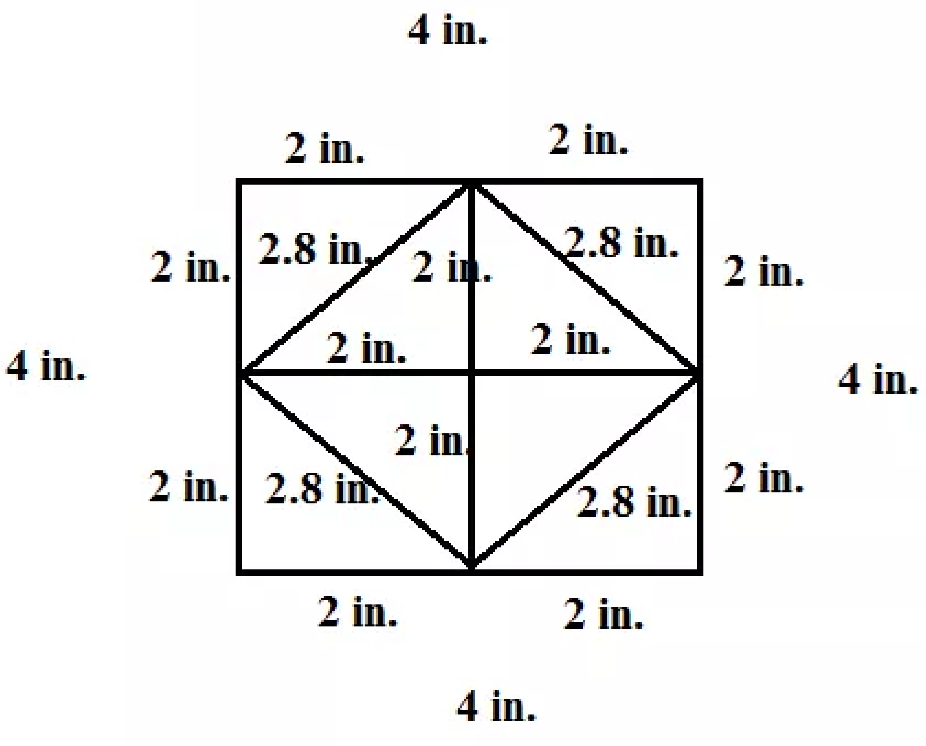
Answer 29PA.

It is given that an isosceles right angled triangle side measure 2 in., 2in., 2.8 in

The isosceles triangle is drawn as shown below



Now, 4 in. square is drawn to make the no of triangles as shown below:

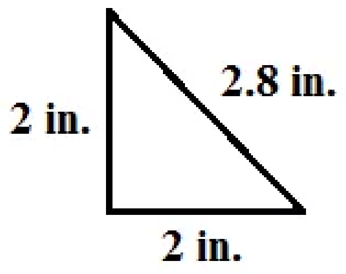


Therefore, the no of triangles of having side lengths 2 in., 2in., 2.8 in is $\boxed{8}$.

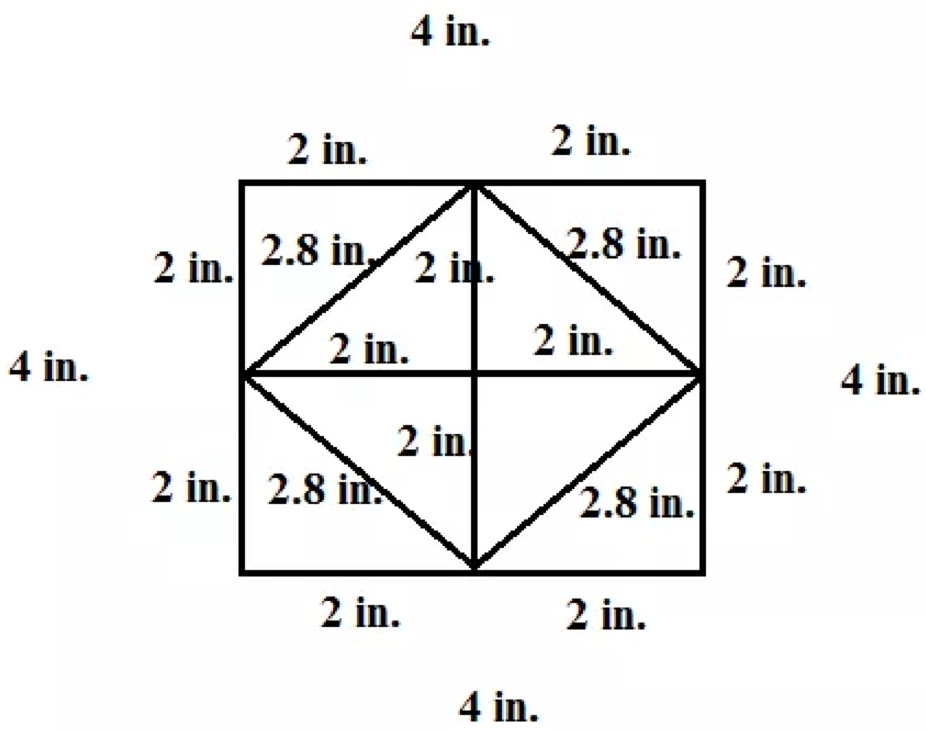
Answer 30PA.

It is given that an isosceles right angled triangle side measure 2 in., 2in., 2.8 in..

The isosceles triangle is drawn as shown below

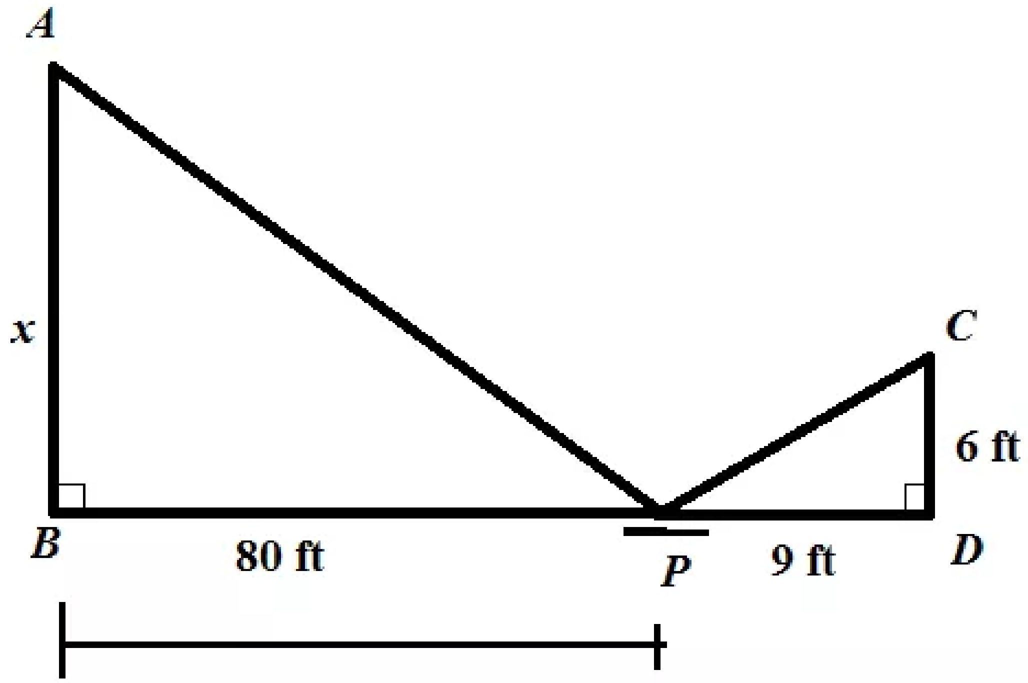


Now, 4 in. square is drawn to make the no of triangles as shown below:



Therefore, the no of largest triangles when she cut from the square is $\boxed{4}$.

Answer 31PA.



Consider x be the height of the building and $\Delta ABP \sim \Delta CDP$.

It is given that

$BP = 80 \text{ ft}, PD = 9 \text{ ft}, CD = 6 \text{ ft}$

Since the corresponding angles have equal measures, $\Delta ABP \sim \Delta CDP$. The lengths of the corresponding sides are proportional.

$$\frac{AB}{CD} = \frac{BP}{PD} \quad \begin{bmatrix} \text{Corresponding sides of similar} \\ \text{triangles are proportional} \end{bmatrix}$$

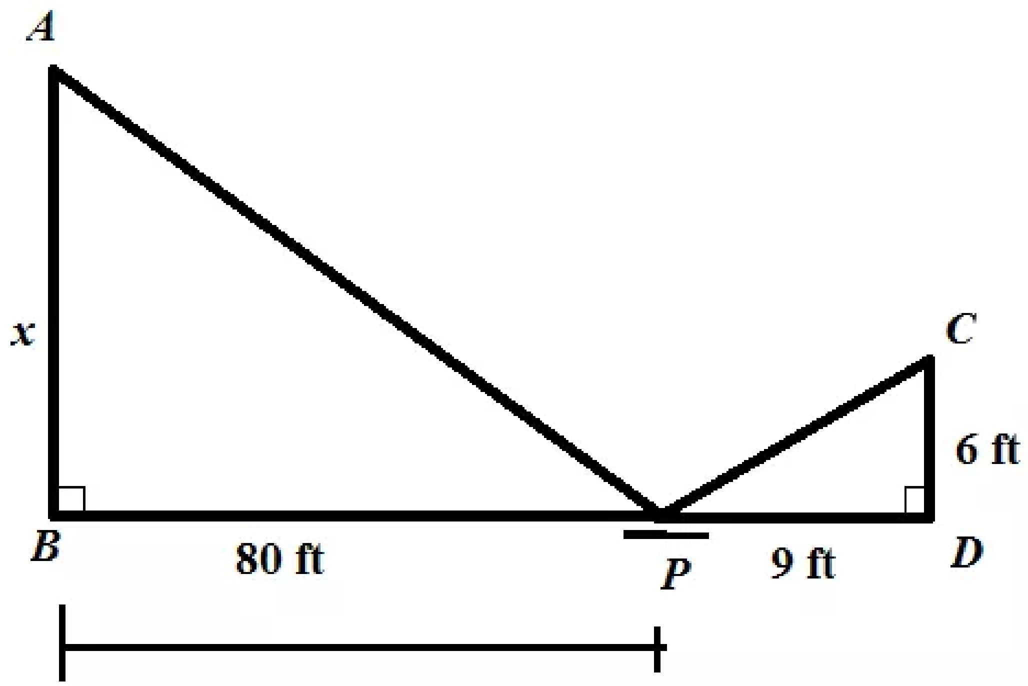
$$\frac{x}{6} = \frac{80}{9} \quad [BP = 80 \text{ ft}, PD = 9 \text{ ft}, CD = 6 \text{ ft}]$$

$$9x = 480$$

$$x \approx 53 \quad [\text{Divide each side by } 9]$$

Therefore, the height of the building is $\boxed{53 \text{ ft}}$.

Answer 32PA.

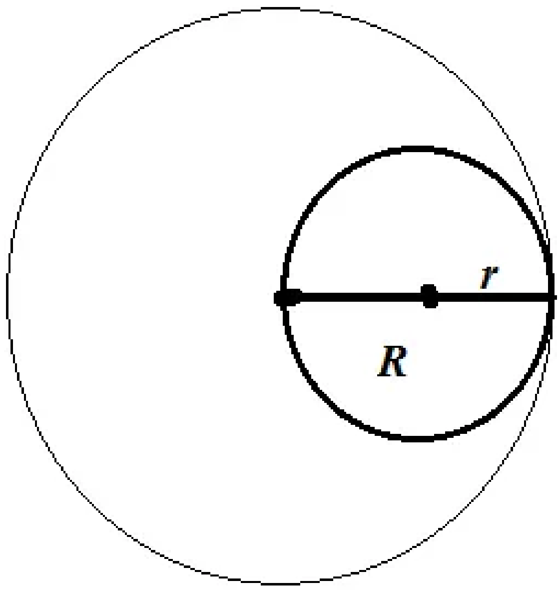


To solve the problem it can be assumed that the triangles *ABP* and *CDP* are similar triangle. By using the side proportionality condition, the height of the building can be estimated.

Therefore, $\Delta ABP \sim \Delta CDP$

Answer 33PA.

The circles are drawn as shown below



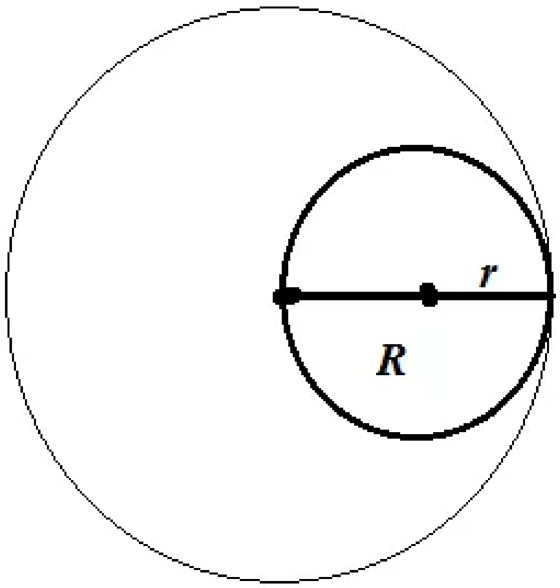
The radius of one circle (*R*) is twice the radius(*r*) of another.

$R = 2r$

Yes, the circles are similar since all the two circles are in the same shape so they are $\boxed{\text{similar triangles}}$.

Answer 34PA.

The circles are drawn as shown below



It is given that

The radius of one circle (R) is twice the radius(r) of another.

$$R = 2r$$

The circumference of the larger circle is

$$C = 2\pi R$$

The circumference of the smaller circle is

$$c = 2\pi r$$

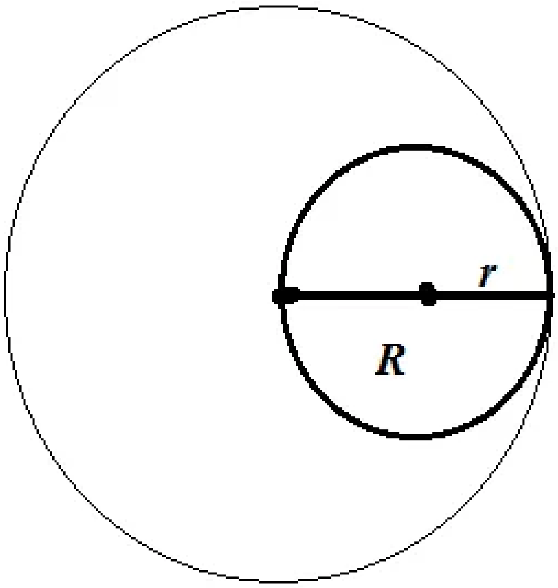
The ratio of the circumferences is

$$\begin{aligned}\frac{C}{c} &= \frac{2\pi R}{2\pi r}\\ &= \frac{R}{r}\\ &= \frac{2r}{r} \quad [R = 2r]\\ &= \frac{2}{1}\end{aligned}$$

Therefore, the ratio of the circumferences is $\boxed{2:1}$.

Answer 35PA.

The circles are drawn as shown below



It is given that

The radius of one circle (R) is twice the radius(r) of another.

$$R = 2r$$

The area of the larger circle is

$$A = \pi R^2$$

The area of the smaller circle is

$$a = \pi r^2$$

The ratio of the areas is

$$\frac{A}{a} = \frac{\pi R^2}{\pi r^2}$$

$$= \frac{R^2}{r^2}$$

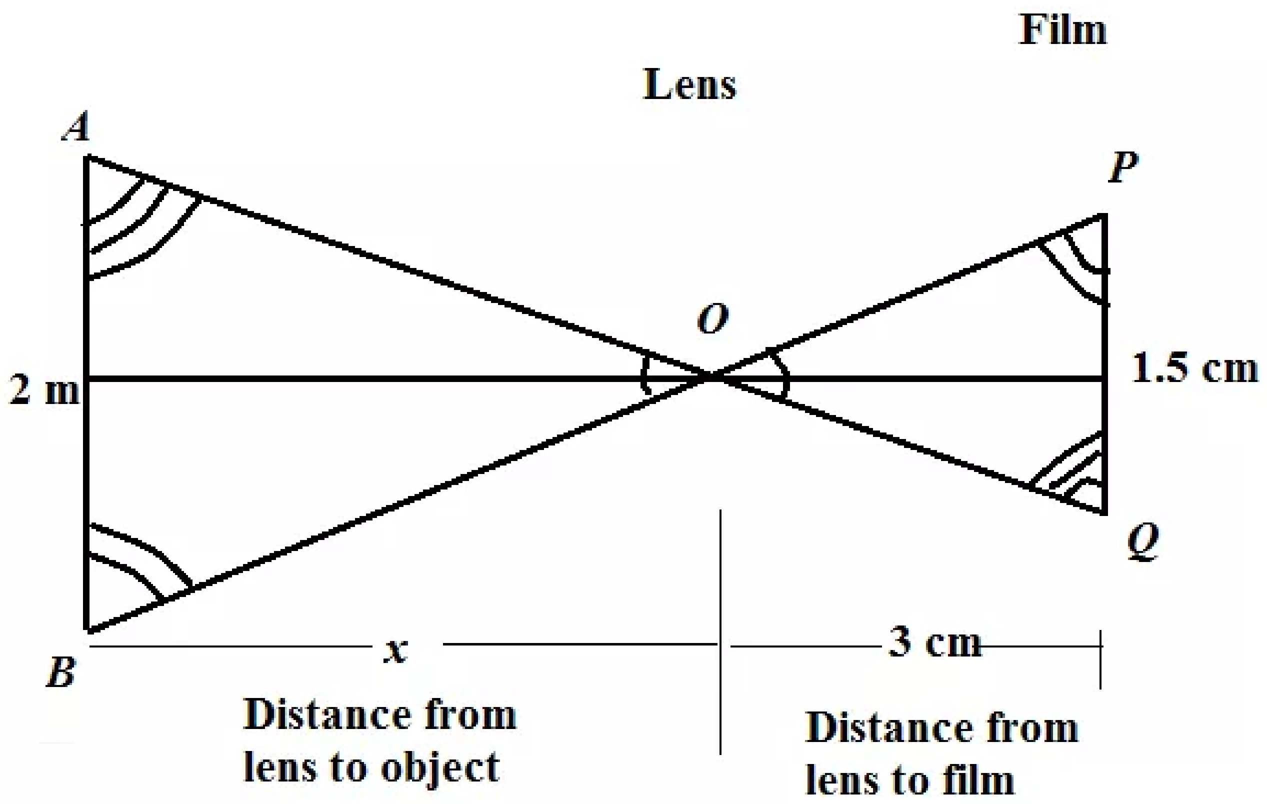
$$= \frac{(2r)^2}{r} \quad \left[R = 2r, R^2 = (2r)^2\right]$$

$$= \frac{4r^2}{r^2}$$

$$= \frac{4}{1}$$

Therefore, the ratio of the areas is $\boxed{4:1}$.

Answer 36PA.



When we take a picture, the image of the object being photographed is projected by the camera lens on to the film. The height of the image on the film can be related to the height of the object using the similar triangle.

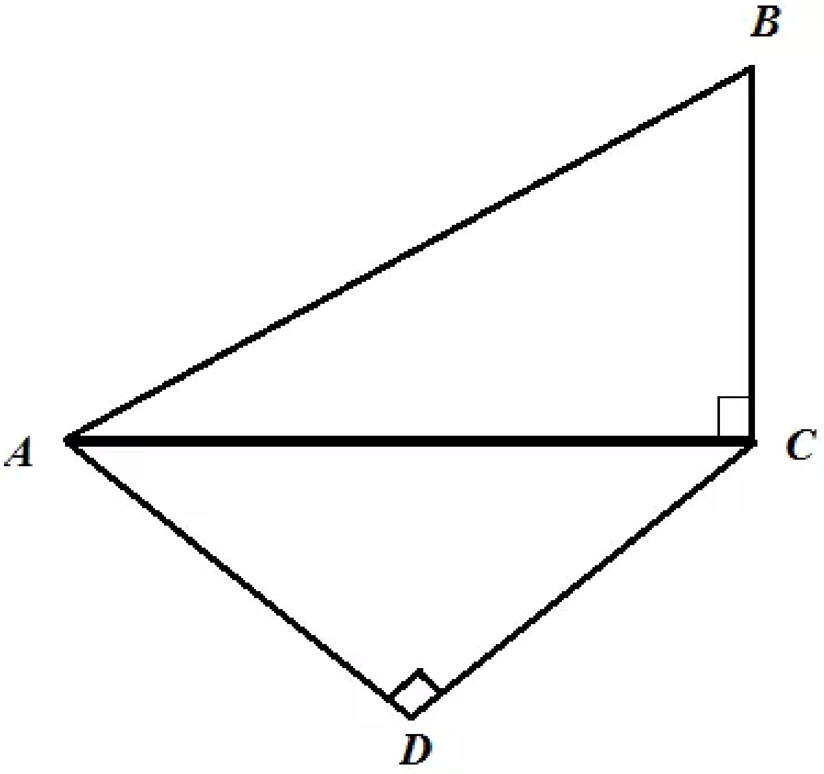
Since the corresponding angles of the given figure are in equal measure so, the triangles *ABO* and *PQO* are similar.

$$\angle A = \angle Q$$
$$\angle P = \angle B$$
$$\angle AOB = \angle POQ$$

Now, $\Delta ABO \sim \Delta PQO$

If two triangles are similar, then their corresponding angle sides are in proportional. So, the image of large object of the picture can be fit by proportional sides as when side increases, the size of the shape will also increases with the constant ratio.

Answer 37PA.



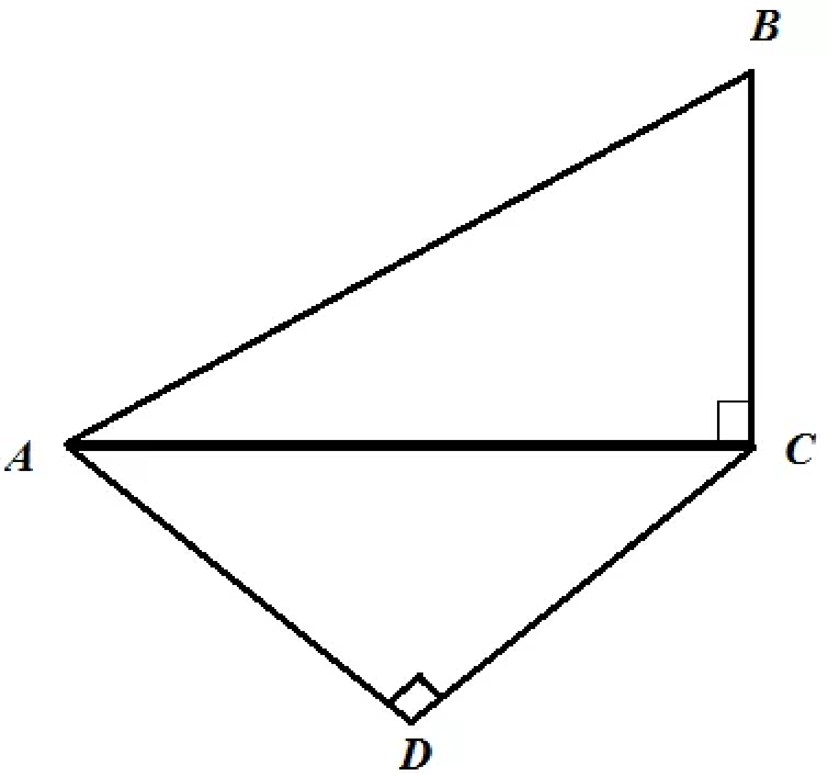
It is given that

$\angle C = 90^0, \angle D = 90^0$

To find the similarity in ΔABC and ΔACD, two angles must be similar with the other triangle so, the triangle ΔABC and ΔACD are not similar.

Therefore, (D) None of these.

Answer 38PA.



It is given that

$\angle C = 90^0, \angle D = 90^0$

In ΔABC and ΔACD Using triangle side sum theorem

$AC + BC > AB$

$AD + CD > AC$

Therefore, (A) $AB > DC$ statement is always true.

Answer 39MYS.

Consider the two points:

$(1,8),(-2,4)$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-2-(1))^2 + (4-8)^2} \\ &= \sqrt{(-3)^2 + (-4)^2} \\ &= \sqrt{25} \\ d &\approx \boxed{5.00} \qquad \text{Round to the nearest hundredth} \end{aligned}$$

Answer 40MYS.

Consider the two points:

$$(6,-3),(12,5)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \\ &= \sqrt{(12-(6))^2+(5-(-3))^2} \\ &= \sqrt{(6)^2+(8)^2} \\ &= \sqrt{100} \end{aligned}$$

$$d \approx \boxed{10.00} \qquad \text{Round to the nearest hundredth}$$

Answer 41MYS.

Consider the two points:

$$(4,7),(3,12)$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \\ &= \sqrt{(3-(4))^2+(12-7)^2} \\ &= \sqrt{(-1)^2+(5)^2} \\ &= \sqrt{26} \end{aligned}$$

$$d \approx \boxed{5.09} \qquad \text{Round to the nearest hundredth}$$

Answer 42MYS.

Consider the two points:

$$(1,5\sqrt{6}),(6,7\sqrt{6})$$

Therefore the distance between the two points will be:

$$\begin{aligned} d &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \\ &= \sqrt{(6-(1))^2+(7\sqrt{6}-5\sqrt{6})^2} \\ &= \sqrt{(5)^2+(2\sqrt{6})^2} \\ &= \sqrt{49} \end{aligned}$$

$$d \approx \boxed{7.00} \qquad \text{Round to the nearest hundredth}$$

Answer 43MYS.

Since the measure of the longest side is 65, consider $c = 65, a = 25$ and $b = 60$.

Then determine whether $c^2 = a^2 + b^2$.

$$c^2 = a^2 + b^2 \quad [\text{Pythagorean theorem}]$$

$$65^2 \stackrel{?}{=} 25^2 + 60^2 \quad \begin{bmatrix} c = 65, a = 25 \\ \text{and } b = 60 \end{bmatrix}$$

$$4225 \stackrel{?}{=} 625 + 3600 \quad [\text{Multiply}]$$

$$4225 \stackrel{?}{=} 4225 \quad [\text{Add}]$$

Since $c^2 = a^2 + b^2$, the triangle is a right triangle.

Answer 44MYS.

Since the measure of the longest side is 35, consider $c = 35, a = 20$ and $b = 25$.

Then determine whether $c^2 = a^2 + b^2$.

$$c^2 = a^2 + b^2 \quad [\text{Pythagorean theorem}]$$

$$35^2 \stackrel{?}{=} 20^2 + 25^2 \quad \begin{bmatrix} c = 35, a = 20 \\ \text{and } b = 25 \end{bmatrix}$$

$$1225 \stackrel{?}{=} 400 + 625 \quad [\text{Multiply}]$$

$$1225 \neq 1025 \quad [\text{Add}]$$

Since $c^2 = a^2 + b^2$, the triangle is not right angled .

Answer 45MYS.

Since the measure of the longest side is 175, consider $c = 175, a = 49$ and $b = 168$.

Then determine whether $c^2 = a^2 + b^2$.

$$c^2 = a^2 + b^2 \quad [\text{Pythagorean theorem}]$$

$$175^2 \stackrel{?}{=} 49^2 + 168^2 \quad \begin{bmatrix} c = 175, a = 49 \\ \text{and } b = 168 \end{bmatrix}$$

$$30625 \stackrel{?}{=} 2401 + 28224 \quad [\text{Multiply}]$$

$$30625 = 30625 \quad [\text{Add}]$$

Since $c^2 = a^2 + b^2$, the triangle is right angled .

Answer 46MYS.

Since the measure of the longest side is 12, consider $c = 12, a = 7$ and $b = 9$.

Then determine whether $c^2 = a^2 + b^2$.

$c^2 = a^2 + b^2$ [Pythagorean theorem]

$12^2 \stackrel{?}{=} 7^2 + 9^2$ $\begin{bmatrix} c = 12, a = 7 \\ \text{and } b = 9 \end{bmatrix}$

$144 \stackrel{?}{=} 49 + 81$ [Multiply]

$144 \neq 130$ [Add]

Since $c^2 = a^2 + b^2$, the triangle is not right angled .

Answer 47MYS.

Consider the polynomial is

$1 + 3x^2 - 7x$

The standard equation of polynomial is

$ax^n + bx^{n-1} + ... + cx^{n-n} = ax^n + bx^{n-1} + ... + c$.

Therefore, the arrange term of the given polynomial is $\boxed{3x^2 - 7x + 1}$.

Answer 48MYS.

Consider the polynomial is

$7 - 4x - 2x^2 + 5x^3$

The standard equation of polynomial is

$ax^n + bx^{n-1} + ... + cx^{n-n} = ax^n + bx^{n-1} + ... + c$.

The polynomial can be written as

$5x^3 - 2x^2 - 4x + 7$

Therefore, the arrange term of the given polynomial is $\boxed{5x^3 - 2x^2 - 4x + 7}$.

Answer 49MYS.

Consider the polynomial is

$$6x + 3 - 3x^2$$

The standard equation of polynomial is

$$ax^n + bx^{n-1} + ... + cx^{n-n} = ax^n + bx^{n-1} + ... + c.$$

The polynomial can be written as

$$-3x^2 + 6x + 3$$

Therefore, the arrange term of the given polynomial is $\boxed{-3x^2 + 6x + 3}$.

Consider the polynomial is

$$6x + 3 - 3x^2$$

The standard equation of polynomial is

$$ax^n + bx^{n-1} + ... + cx^{n-n} = ax^n + bx^{n-1} + ... + c.$$

The polynomial can be written as

$$-3x^2 + 6x + 3$$

Therefore, the arrange term of the given polynomial is $\boxed{-3x^2 + 6x + 3}$.

Answer 51MYS.

Consider the system of equations

$2x + y = 4$ ...... (1)

$x - y = 5$ ...... (2)

Add the equation (1) with equation (2)

$$\begin{array}{r} 2x + y = 4 \\ \underline{x - y = 5} \\ 3x = 9 \\ x = 3 \end{array}$$

Now, substitute $x = 3$ in the equation (2)

$$x - y = 5$$
$$3 - y = 5$$
$$3 - 5 = y$$
$$-2 = y$$

Therefore, the solution is $\boxed{(x, y) = (3, -2)}$

Answer 52MYS.

Consider the system of equations

$3x - 2y = -13$ ...... (1)

$2x - 5y = -5$ ...... (2)

Multiply equation (1) by 5 and equation (2) by 2.Now, subtract the equation (2) from equation (1).

$$\begin{array}{r} 15x - 10y = -65 \\ \underline{4x - 10y = -10} \\ 11x = -55 \\ x = -5 \end{array}$$

Now, substitute $x = -5$ in the equation (2)

$$2x - 5y = 5$$
$$2(-5) - y = 5$$
$$-10 - 5 = y$$
$$-15 = y$$

Therefore, the solution is $\boxed{(x, y) = (-5, -15)}$

Answer 53MYS.

Consider the system of equations

$0.6m - 0.2n = 0.9$ ...... (1)

$0.3m = 0.45 - 0.1n$ ...... (2)

Rewrite the equation (2) as

$0.3m + 0.1n = 0.45$ ...... (3)

Multiply equation (3) by 2 and add the equation (1) with equation (3).

$$\begin{array}{r} 0.6m - 0.2n = 0.9 \\ \underline{0.6m + 0.2n = 0.9} \\ 1.2m = 1.8 \\ m = 1.5 \end{array}$$

Now, substitute $m=1.5$ in the equation (2)

$$0.3m=0.45-0.1n$$
$$0.3(1.5)=0.45-0.1n$$
$$0.1n=0.45-0.45$$
$$n=0$$

Therefore, the solution is $\boxed{(m,n)=(1.5,0)}$

Answer 54MYS.

Consider the system of equations

$$\frac{1}{3}x+\frac{1}{2}y=8 \text{ ...... (1)}$$

$$\frac{1}{2}x-\frac{1}{4}y=0 \text{ ...... (2)}$$

Multiply equation (2) by 2 and add the equation (1) with equation (2).

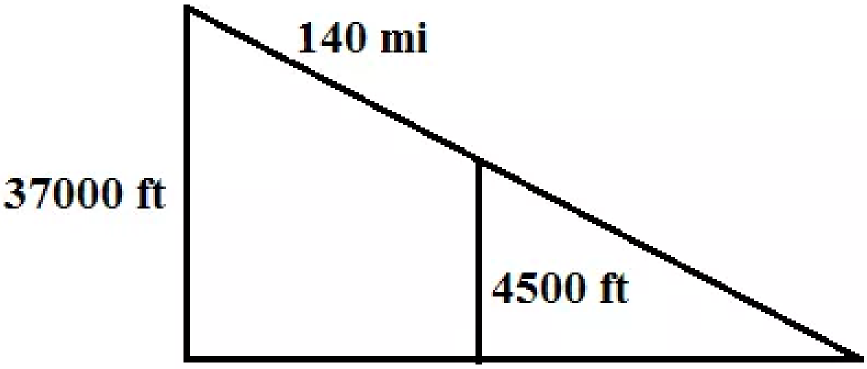
$$\frac{1}{3}x+\frac{1}{2}y=8$$
$$\underline{x-\frac{1}{2}y=0}$$
$$\frac{4}{3}x=8$$
$$x=6$$

Now, substitute $x=6$ in the equation (2)

$$\frac{1}{2}x-\frac{1}{4}y=0$$
$$\frac{1}{2}(6)-\frac{1}{4}y=0$$
$$6=\frac{y}{4}$$
$$y=24$$

Therefore, the solution is $\boxed{(x,y)=(6,24)}$

Answer 55MYS.



It is given that

$$1 \text{ mi.} = 5280 \text{ ft}$$

$$140 \text{ mi} = (140 \times 5280) \text{ ft} = 739200 \text{ ft}$$

$$\begin{aligned} \text{Slope of descent} &= \frac{\text{R ise}}{\text{Run}} \\ &= \frac{4500-37000}{739200} \\ &= \frac{-32500}{739200} \\ &= -0.044 \end{aligned}$$

Therefore, the approximate slope of descent should be $\boxed{-0.044}$.

Answer 56MYS.

Consider the expression

$$\frac{a}{c}$$

It is given that

$$a = 6, b = -5, c = -1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned} \frac{a}{c} &= \frac{6}{-1.5} \quad [a = 6, b = -5, c = -1.5] \\ &= -4 \end{aligned}$$

Therefore, the value of the expression is $\boxed{-4}$.

Answer 57MYS.

Consider the expression

$$\frac{b}{a}$$

It is given that

$$a=6, b=-5, c=-1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned}\frac{b}{a}&=\frac{-5}{6} \quad [a=6, b=-5, c=-1.5]\\&=-0.8\overline{3}\end{aligned}$$

Therefore, the value of the expression is $\boxed{-0.8\overline{3}}$.

Answer 58MYS.

Consider the expression

$$\frac{a+b}{c}$$

It is given that

$$a=6, b=-5, c=-1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned}\frac{a+b}{c}&=\frac{6-5}{-1.5} \quad [a=6, b=-5, c=-1.5]\\&=-\frac{1}{1.5}\\&=-0.\overline{6}\end{aligned}$$

Therefore, the value of the expression is $\boxed{-0.\overline{6}}$.

Answer 59MYS.

Consider the expression

$$\frac{ac}{b}$$

It is given that

$$a=6, b=-5, c=-1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned}\frac{ac}{b}&=\frac{(6)(-1.5)}{-5} \quad [a=6, b=-5, c=-1.5]\\&=\frac{9}{5}\\&=1.8\end{aligned}$$

Therefore, the value of the expression is $\boxed{1.8}$.

Answer 60MYS.

Consider the expression

$$\frac{b}{a+c}$$

It is given that

$$a=6, b=-5, c=-1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned}\frac{b}{a+c}&=\frac{(-5)}{6-1.5} \quad [a=6, b=-5, c=-1.5]\\&=\frac{-5}{4.5}\\&=-1.\bar{1}\end{aligned}$$

Therefore, the value of the expression is $\boxed{-1.\bar{1}}$.

Answer 61MYS.

Consider the expression

$$\frac{c}{a+c}$$

It is given that

$$a=6, b=-5, c=-1.5$$

To evaluate the value of the expression follow step

$$\begin{aligned}\frac{c}{a+c}&=\frac{(-1.5)}{6-1.5} \quad [a=6, b=-5, c=-1.5]\\&=\frac{-1.5}{4.5}\\&=-\frac{1}{3}\\&=-0.\bar{3}\end{aligned}$$

Therefore, the value of the expression is $\boxed{-0.\bar{3}}$.