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Using Sine and Cosine - Guided Lesson Explanation

Explanation#1

We have write down known. Low of cosines substitute simplify.

Isolate cos A find the inverse.

P = 17, Q = 21, R = 13

$a^2 = b^2 + c^2 - 2bc \cos A$

$(17^2) = (21^2) + (13^2) - 2(21)(13) \cos A$

$(289) = 441 + 169 - (546)$

$289 = 610 - 546$

$-321 = -546$

$\frac{321}{546} = \cos A$

$m\angle A = 53.99^o$

Explanation#2

We have write down what is known. Alternative forms of Law of cosine can be substituted.

$e = 13, f = 24, \angle g = 114^o$

$g^2 = e^2 + f^2 - 2ef \cos G$

$g^2 = (13)^2 + (24)^2 - 2(13)(24) \cos c$

$g^2 = 169 + 576 - 624$

$\sqrt{g^2} = \sqrt{169 + 567 - 624 \cos 114^o}$

$g = 169 + 576 - (624 \times - .4067)$

$g = \sqrt{169 + 576 + 253.78}$

$g = 31.60$

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Explanation#3

We need to find 1) angle P 2) length of PR 3) length of PQ

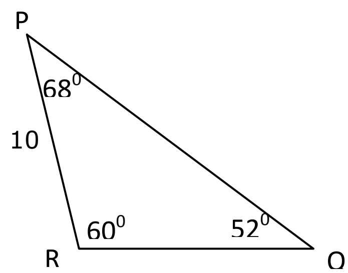
Start with the missing angle:

$\angle P + \angle Q + \angle R = 180°$

$\angle P + 52° + 60° = 180°$

$\angle P + 112° = 180°$ (Subtract 72° from both sides)

$\angle P = 68°$



The law of since is based on the proportionality of side and angle in triangle. The law states that for the angle of a non right angle, each angle of the triangle has the same ratio of angle measure to sine value.

$$\frac{\sin(P)}{p} = \frac{\sin(Q)}{q} = \frac{\sin(R)}{r}$$

Substitute the known value into the law of sine to find PR.

$$\frac{\sin(68)}{\boldsymbol{p}} = \frac{\sin(52)}{10}$$

Solve the equation for RQ or p

RQ = 11.77

The law of since is based on the proportionality of side and angle in triangle. The law states that for the angle of a non right angle, each angle of the triangle has the same ratio of angle measure to sine value.

$$\frac{\sin(P)}{p} = \frac{\sin(Q)}{q} = \frac{\sin(R)}{r}$$

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Substitute the known value into the law of sine to find PQ.

$$\frac{\sin(68)}{11.77} = \frac{\sin(60)}{r}$$

Solve the equation for PQ or r.

PQ = 10.99