6.3 Answers

6.3.1 Solution to Starter for Lesson 6

Answer 6.start.1

$$\cos W = \frac{s^2 + t^2 - w^2}{2st}$$

Answer 6.start.2

$$\cos P = \frac{a^2 + d^2 - p^2}{2ad}$$

6.3.2 Solution to 6.2 Exercise

Answer 1

$$\cos F = \frac{u^2 + n^2 - f^2}{2un}$$

Answer 2

$$\cos T = \frac{h^2 + a^2 - t^2}{2ha}$$

Answer 3

$$\cos Z = \frac{d^2 + a^2 - z^2}{2da}$$

Answer 4

(i) $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$

(ii) $\cos B = \frac{a^2 + c^2 - b^2}{2ac}$

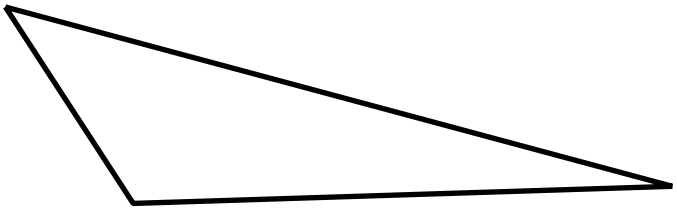
(iii) $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

Answer 5

(i) 34.7° (1 decimal place asked for)
(ii) 96.3° (1 decimal place asked for)
(iii) 55.2° (1 decimal place asked for)
(iv) 71.9° (1 decimal place asked for)
(v) 106.7° (1 decimal place asked for)

Answer 6

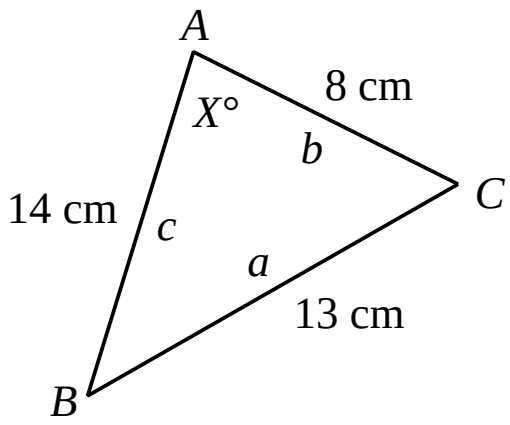
(i)



(ii) The largest angle is opposite the longest side, the 9 cm side

Answer 7

(i)



(ii)

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

(iii)

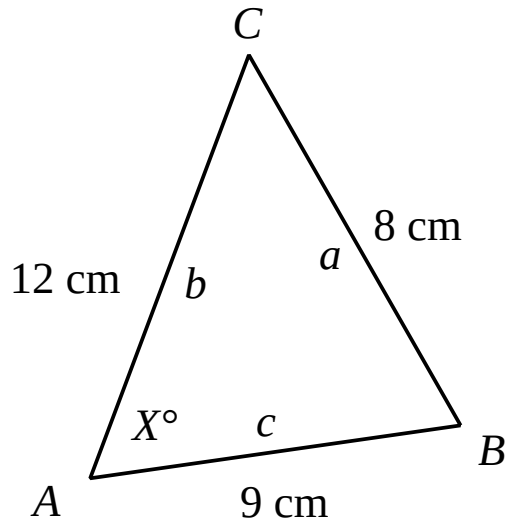
$$= \frac{8^2 + 14^2 - 13^2}{2 \times 8 \times 14}$$

$$= 0.40625$$

$$A = 66°$$

Answer 8

(i)



(ii) and **(iii)**

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

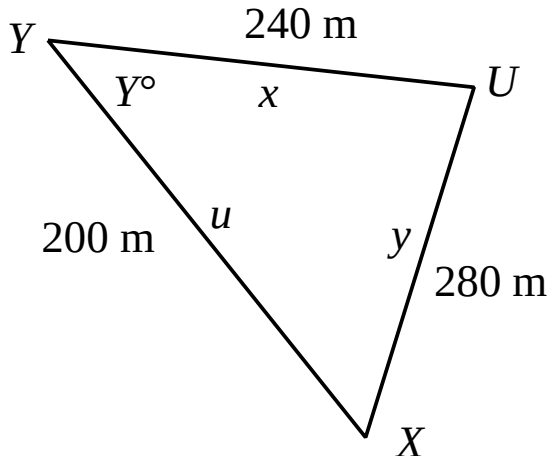
$$= \frac{12^2 + 9^2 - 8^2}{2 \times 12 \times 9}$$

$$= 0.745$$

$$A = 41.8°$$

Answer 9

(i)



(ii) and **(iii)**

$$\cos Y = \frac{x^2 + u^2 - y^2}{2xu}$$

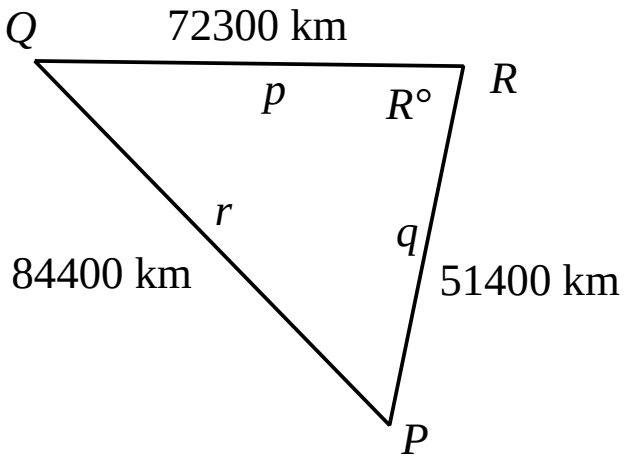
$$= \frac{240^2 + 200^2 - 280^2}{2 \times 240 \times 200}$$

$$= 0.2$$

$$Y = 78.5° \text{ (1 decimal place asked for)}$$

Answer 10

(i)



(ii) and **(iii)**

$$\cos R = \frac{p^2 + q^2 - r^2}{2pq}$$

$$= \frac{72300^2 + 51400^2 - 84400^2}{2 \times 72300 \times 51400}$$

$$= 0.1$$

$$R = 84.3° \text{ (1 decimal place asked for)}$$

Answer 11

(i)

$$\sin C = \frac{2 \times Area}{ab}$$

(ii)

$$\sin C = \frac{2 \times 52}{18 \times 11}$$

$$= 0.525$$

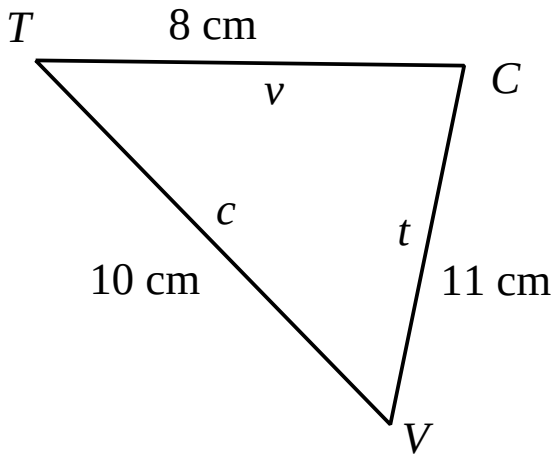
$$C = 31.7° \text{ (acute(}$$

(iii)

$$C = 148.3° \text{ (obtuse)}$$

Answer 12

(i)



(ii) and **(iii)**

$$\begin{aligned} \cos T &= \frac{v^2 + c^2 - t^2}{2vc} \\ &= \frac{8^2 + 10^2 - 11^2}{2 \times 8 \times 10} \\ &= 0.26875 \\ T &= 74.4^\circ \end{aligned}$$

(iv) and **(v)**

$$\begin{aligned} \cos V &= \frac{c^2 + t^2 - v^2}{2ct} \\ &= \frac{10^2 + 11^2 - 8^2}{2 \times 10 \times 11} \\ &= 0.7136 \\ V &= 44.45^\circ \end{aligned}$$

(vi)

$$\sum \text{angles in a } \Delta = 180^\circ$$

$$\therefore C = 61.1^\circ$$