PRINTABLE VERSION

Quiz 6

You scored 100 out of 100

Question 1

Your answer is CORRECT.

In right triangle *ABC*, with right angle *C*, $AB = 11$, and $BC = 4$. Find the length of the missing side.

a) $2\sqrt{105}$

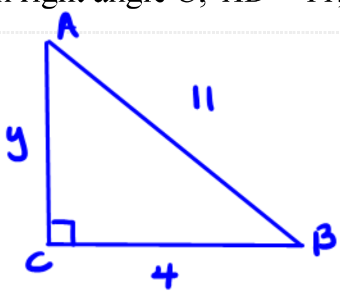
b) $\sqrt{105}$

c) $2\sqrt{137}$

d) $\sqrt{137}$

e) $\sqrt{15}$

f) None of the above.



$4^2+y^2=11^2$

$y^2=121-16$

$y^2=105$

$y=\sqrt{105}$

Question 2

Your answer is CORRECT.

In right triangle *ABC*, with right angle *C*, $AC = 12$, and $BC = 6$. Find the length of the missing side.

a) $3\sqrt{2}$

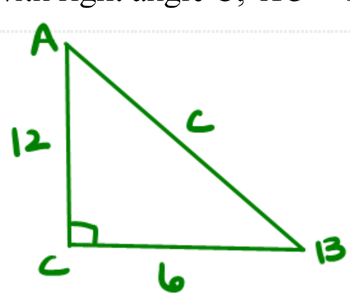
b) $6\sqrt{5}$

c) $12\sqrt{3}$

d) $12\sqrt{5}$

e) $6\sqrt{3}$

f) None of the above.



$12^2+6^2=c^2$

$144+36=c^2$

$c^2=180$

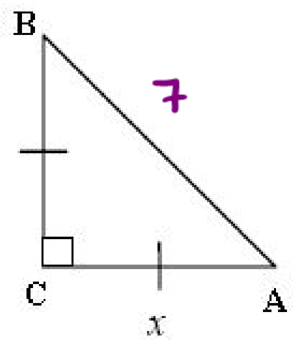
$c=\sqrt{180}=\sqrt{36\cdot 5}$

$=6\sqrt{5}$

Question 3

Your answer is CORRECT.

In right triangle ABC, $AB = 7$. Find x.



45:45:90
$a \quad a \quad \sqrt{2}a$
$x \quad x \quad 7$

$\sqrt{2}a = 7$

$a = \frac{7}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$

a) $\frac{7}{2}\sqrt{2}$

b) 14

c) $7\sqrt{2}$

d) $7\sqrt{3}$

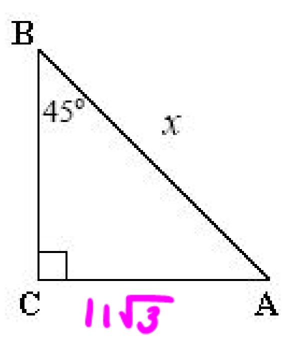
e) $\frac{7}{2}$

f) None of the above.

Question 4

Your answer is CORRECT.

Right triangle ABC is shown below. If $AC = 11\sqrt{3}$, find x.



45:45:90
$a \quad a \quad \sqrt{2}a$
$11\sqrt{3} \quad 11\sqrt{3} \quad x$

$a = 11\sqrt{3}$
$x = \sqrt{2}a$
$x = \sqrt{2}(11\sqrt{3})$

$x = 11\sqrt{6}$

a) 22

b) ◉ $11\sqrt{6}$

c) ○ $33\sqrt{2}$

d) ○ $11\sqrt{2}$

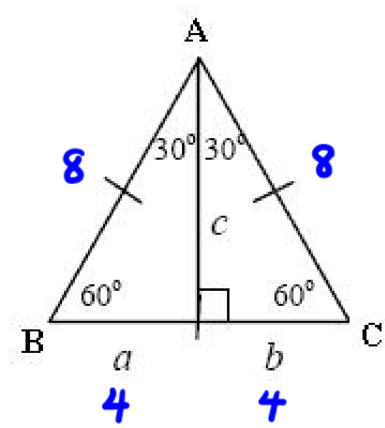
e) ○ $22\sqrt{3}$

f) ○ None of the above.

Question 5

Your answer is CORRECT.

In the figure below, an altitude is drawn to the base of equilateral triangle ABC. If $AC = 8$, find a and b.



$30 : 60 : 90$

$a \quad \sqrt{3}a \quad 2a$

$4 \quad c \quad 8$

$2a = 8$

$a = 4$

$c = \sqrt{3}a$

$c = 4\sqrt{3}$

a) ○ $a = b = 4\sqrt{3}$

$a = b = 4$

b) ○ $a = b = 8\sqrt{3}$

c) ○ $a = b = 8\sqrt{2}$

d) ◉ $a = b = 4$

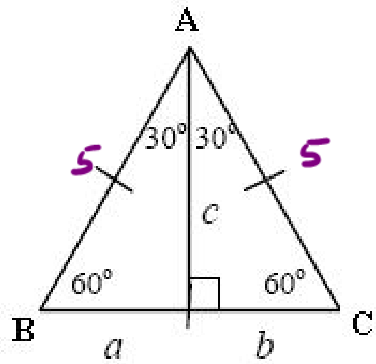
e) ○ $a = b = 4\sqrt{2}$

f) ○ None of the above.

Question 6

Your answer is CORRECT.

In the figure below, an altitude is drawn to the base of equilateral triangle ABC. If $AC = 5$, find c, the length of the altitude.



30:60:90
$a \quad \sqrt{3}a \quad 2a$
$\frac{5}{2} \quad c \quad 5$

$2a = 5$
$a = \frac{5}{2}$

$c = \sqrt{3}a$

$c = \sqrt{3}\left(\frac{5}{2}\right) = \frac{5\sqrt{3}}{2}$

a) $c = 5\sqrt{3}$

b) $c = \frac{5}{2}\sqrt{2}$

c) $c = 10\sqrt{2}$

d) $c = \frac{5}{3}\sqrt{3}$

e) $c = \frac{5}{2}\sqrt{3}$

f) None of the above.

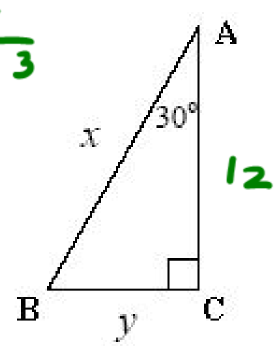
Question 7

Your answer is CORRECT.

Given triangle ABC as shown below. If $AC = 12$, find x and y.

$y = a$
$y = 4\sqrt{3}$

$x = 2a$
$x = 8\sqrt{3}$



30:60:90
$a \quad \sqrt{3}a \quad 2a$
$y \quad 12 \quad x$

$\sqrt{3}a = 12$

$a = \frac{12}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$

a) $\{x = 12\sqrt{2}, y = 12\}$

b) $\{x = 12\sqrt{3}, y = 8\sqrt{3}\}$

c) $\{x = 8\sqrt{3}, y = 4\sqrt{3}\}$

d) $\{x = 24, y = 24\sqrt{3}\}$

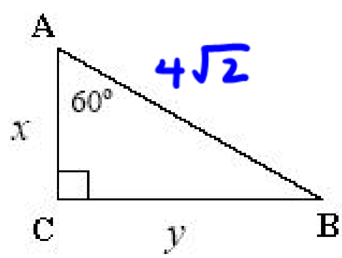
e) $\{x = 4\sqrt{3}, y = 8\sqrt{3}\}$

f) None of the above.

Question 8

Your answer is CORRECT.

Right triangle ABC is shown below. If $AB = 4\sqrt{2}$, find x and y.



30 : 60 : 90

$a \quad \sqrt{3}a \quad 2a$

$x \quad y \quad 4\sqrt{2}$

$2a = 4\sqrt{2}$

$a = 2\sqrt{2}$

$y = \sqrt{3}a$

$y = 2\sqrt{6}$

$x = a$

$x = 2\sqrt{2}$

a) $x = y = 4$

b) $\{x = 2\sqrt{2}, y = 2\sqrt{6}\}$

c) $\{x = 4\sqrt{6}, y = 2\sqrt{2}\}$

d) $\{x = 8\sqrt{2}, y = 8\sqrt{6}\}$

e) $\{x = 2\sqrt{6}, y = 2\sqrt{2}\}$

f) None of the above.

Question 9

Your answer is CORRECT.

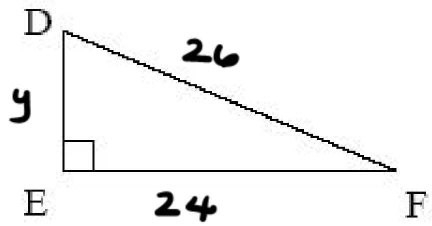
Given triangle DEF as shown below. If $DF = 26$ and $EF = 24$, find $\sin(D)$ and $\tan(F)$.
Note: The triangle may not be drawn to scale.

$y^2 + 24^2 = 26^2$

$y^2 = 676 - 576$

$y^2 = 100$

$y = 10$



$\sin(D) = \frac{24}{26} = \frac{12}{13}$

$\tan(F) = \frac{10}{24} = \frac{5}{12}$

a) $\sin(D) = {}^{12}\!/_{13}$, $\tan(F) = {}^{12}\!/_{5}$

b) $\sin(D) = {}^{5}\!/_{12}$, $\tan(F) = {}^{12}\!/_{13}$

c) $\sin(D) = {}^{13}\!/_{12}$, $\tan(F) = {}^{12}\!/_{5}$

d) $\sin(D) = {}^{12}\!/_{13}$, $\tan(F) = {}^{5}\!/_{12}$

e) $\sin(D) = {}^{13}\!/_{12}$, $\tan(F) = {}^{5}\!/_{12}$

f) None of the above.

Question 10

Your answer is CORRECT.

Suppose that θ is an acute angle of a right triangle and $\tan(\theta) = {}^{4\sqrt{2}}\!/_{5}$. Find $\sin(\theta)$ and $\cos(\theta)$.

a) $\sin(\theta) = \frac{1}{8}\sqrt{114}$, $\cos(\theta) = \frac{1}{5}\sqrt{57}$

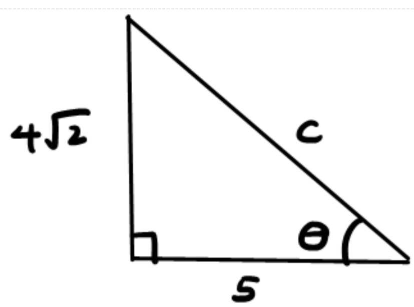
b) $\sin(\theta) = \frac{8}{57}\sqrt{114}$, $\cos(\theta) = \frac{10}{57}\sqrt{57}$

c) $\sin(\theta) = \frac{4}{57}\sqrt{114}$, $\cos(\theta) = \frac{5}{57}\sqrt{57}$

d) $\sin(\theta) = \frac{4}{5}\sqrt{2}$, $\cos(\theta) = \frac{5}{8}\sqrt{2}$

e) $\sin(\theta) = \frac{5}{57}\sqrt{57}$, $\cos(\theta) = \frac{4}{57}\sqrt{114}$

f) None of the above.



$(4\sqrt{2})^2 + 5^2 = c^2$

$32 + 25 = c^2$

$c = \sqrt{57}$

$\sin\theta = \frac{4\sqrt{2}}{\sqrt{57}} \cdot \frac{\sqrt{57}}{\sqrt{57}} = \frac{4\sqrt{114}}{57}$

$\cos\theta = \frac{5}{\sqrt{57}} \cdot \frac{\sqrt{57}}{\sqrt{57}} = \frac{5\sqrt{57}}{57}$

Question 11

Your answer is CORRECT.

Suppose that θ is an acute angle of a right triangle and that $\sec(\theta) = {}^{13}/_{7}$. Find $\csc(\theta)$ and $\tan(\theta)$.

a) $\csc(\theta) = \frac{13}{60}\sqrt{30}$, $\tan(\theta) = \frac{7}{60}\sqrt{30}$

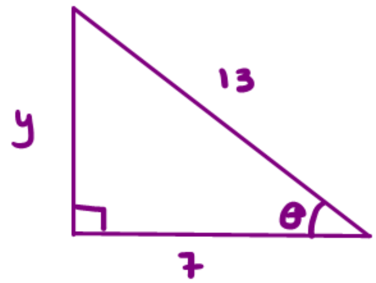
b) $\csc(\theta) = \frac{2}{7}\sqrt{30}$, $\tan(\theta) = \frac{2}{13}\sqrt{30}$

c) $\csc(\theta) = \frac{13}{60}\sqrt{30}$, $\tan(\theta) = \frac{2}{7}\sqrt{30}$

d) $\csc(\theta) = \frac{7}{60}\sqrt{30}$, $\tan(\theta) = \frac{13}{60}\sqrt{30}$

e) $\csc(\theta) = \frac{2}{13}\sqrt{30}$, $\tan(\theta) = \frac{2}{7}\sqrt{30}$

f) None of the above.



$y^2 + 7^2 = 13^2$

$y^2 = 169 - 49$

$y^2 = 120$

$y = \sqrt{120}$

$y = 2\sqrt{30}$

$\csc\theta = \frac{13}{2\sqrt{30}} = \frac{13\sqrt{30}}{60}$

$\tan\theta = \frac{2\sqrt{30}}{7}$

Question 12

Your answer is CORRECT.

Convert the following degree measure to radians: 240^{o}.

a) ${}^{6\pi}/_{5}$

b) ${}^{16\pi}/_{3}$

c) ${}^{2\pi}/_{3}$

d) ${}^{4\pi}/_{3}$

e) ${}^{3\pi}/_{2}$

f) None of the above.

$240 \cdot \frac{\pi}{180} = \frac{24\cancel{0}\,\pi}{18\cancel{0}} = \frac{4\pi}{3}$

Question 13

Your answer is CORRECT.

Convert the following radian measure to degrees: ${}^{14\pi}/_{15}$

a) 336°

$\frac{14\cancel{\pi}}{\cancel{15}} \cdot \frac{\cancel{180}}{\cancel{\pi}} = 14 \cdot 12 = 168°$

b) $\frac{2700°}{7}$

c) 168°

d) 42°

e) $\frac{560°}{3}$

f) None of the above.

Question 14

Your answer is CORRECT.

To find the length of the arc of a circle, think of the arc length as simply a fraction of the circumference of the circle. If the central angle θ defining the arc is given in degrees, then the arc length can be found using the formula:

$$s = \frac{\theta}{360^\circ} \cdot 2\pi r$$

Use the formula above to find the arc length s, where $\theta = 45^\circ$ and $r = 9\text{cm}$.

a) $\frac{9\pi}{8}$ cm

$s = \frac{45}{360} \cdot 2\pi(9) = \frac{9\pi}{4}$

b) 810π cm

c) $\frac{9\pi}{2}$ cm

d) $\frac{9\pi}{4}$ cm

e) $\frac{9\pi}{16}$ cm

f) None of the above.

Question 15

Your answer is CORRECT.

If the central angle θ defining the arc is given in radians rather than degrees, then the arc length can be found using the formula:

$$s = \frac{\theta}{2\pi} \cdot 2\pi r \text{, which simplifies to } s = r\theta$$

Use the formula above to find the arc length s, where $\theta = {}^{4\pi}/_{3}$ and $r = 6\text{yd}$.

a) 2880π yd

b) 4π yd

c) 2π yd

d) 8π yd

e) 16π yd

f) None of the above.

$$s = \frac{4\pi/3}{2\pi}(2\pi)(6)$$

$$s = \frac{4\pi}{6\pi}(12\pi) = 8\pi$$

Question 16

Your answer is CORRECT.

Find the perimeter of a sector of a circle with central angle $\theta = {}^{3\pi}/_{2}$ and radius 8 ft.

a) $(8 + 12\pi)$ ft

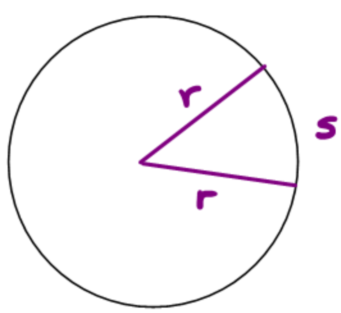
b) $(16 + 24\pi)$ ft

c) $(16 + 12\pi)$ ft

d) 16 ft

e) 12π ft

f) None of the above.



$P = r + r + s = 2r + s$

$P = 2(8) + 12\pi$

$P = (16 + 12\pi)$ ft

$\theta = \frac{s}{r}$

$s = r\theta = 8\left(\frac{3\pi}{2}\right) = 4(3\pi) = 12\pi$

Question 17

Your answer is CORRECT.

To find the area of a sector of a circle, think of the sector as simply a fraction of the circle. If the central angle θ defining the sector is given in degrees, then the area of the sector can be found using the formula:

$$A = \frac{\theta}{360^\circ} \cdot \pi r^2$$

Use the formula above to find the area of the sector, where $\theta = 225^{o}$ and $r = 7$ cm.

a) $^{245\pi}/_{8}$ cm^2

$$A = \frac{225}{360}\pi(7^2) = \frac{5}{8}(49)\pi = \frac{245\pi}{8}\ cm^2$$

b) $^{245\pi}/_{4}$ cm^2

c) $^{35\pi}/_{8}$ cm^2

d) $^{35\pi}/_{4}$ cm^2

e) $^{35\pi}/_{2}$ cm^2

f) None of the above.

Question 18

Your answer is CORRECT.

A sector of a circle has central angle $\theta = {}^{\pi}/_{3}$ and area $^{49\pi}/_{6}$ ft^2. Find the radius of the circle.

a) $^{7}/_{2}$ ft

b) $^{7}/_{4}$ ft

c) 7 ft

d) 14 ft

e) 28 ft

f) None of the above.

$$A = \frac{1}{2}r^2\theta$$

$$\frac{49\pi}{6} = \frac{1}{2}(r^2)\left(\frac{\pi}{3}\right)$$

$$\frac{49\pi}{6} = \frac{\pi}{6}r^2$$

$$49 = r^2$$

$$r = 7$$

Question 19

Your answer is CORRECT.

A car has wheels with a 8 inch radius. If each wheel's rate of turn is 5 revolutions per second, find the angular speed in units of radians/second.

a) 40π

$$\left|\frac{5\text{ rev}}{\text{sec}}\right|\frac{2\pi}{1\text{ rev}}\right| = 10\pi$$

b) 10π

c) 5π

d) $^{5\pi}/_{2}$

e) $^{5\pi}/_{8}$

f) None of the above.

Question 20

Your answer is CORRECT.

A car has wheels with a 11 inch radius. If each wheel's rate of turn is 5 revolutions per second, how fast is the car moving in units of inches/sec?

a) $^{11\pi}/_{5}$

$$\left| \frac{5 \text{ revs}}{\text{sec}} \middle| \frac{2\pi}{1 \text{ rev}} \right| = 10\pi$$

b) 22π

c) 55π

$$(10\pi)(11) = 110\pi$$

d) $^{5\pi}/_{11}$

e) 110π

f) None of the above.