Trigonometry Practice Day 2

For 1 – 6, use the figures given to find each trigonometric ratio. Express the answers as a fraction and simplify!

1. $\cos A$

$$\frac{15}{5\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$$

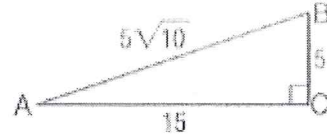$$\frac{15\sqrt{10}}{50} = \boxed{\frac{3\sqrt{10}}{10}}$$

2. $\tan B$

$$\frac{15}{5}$$

$$\boxed{= 3}$$

3. $\sin A$

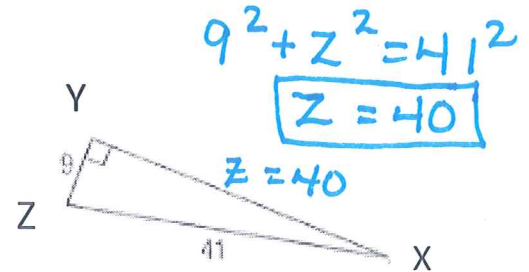$$\frac{5}{5\sqrt{10}}$$

$$\boxed{= \frac{\sqrt{10}}{10}}$$

Triangle with $5\sqrt{10}$ (hypotenuse A to B), 5 (B to C), 15 (A to C)

4. $\tan Z$

$$= \frac{40}{9}$$

5. $\sin Z$

$$= \frac{40}{41}$$

6. $\cos Z$

$$= \frac{9}{41}$$

$$9^2 + z^2 = 41^2$$
$$\boxed{z = 40}$$
$$z = 40$$

Triangle with Y, 9, Z, 41, X

Find x. Round to the nearest tenth.

7.

Triangle: $x°$, 15, 23

$$x = \tan^{-1}\left(\frac{23}{15}\right)$$

$$x \approx 56.9°$$

8.

Triangle: 29, $x°$, 15

$$x = \sin^{-1}\left(\frac{12}{29}\right)$$

$$x \approx 24.4°$$

9.

Triangle: 34, 41°, x

$$\cos 41 = \frac{x}{34}$$

$$x \approx 24.7°$$

10.

Triangle ABC: 23, 13, $x°$

$$x = \sin^{-1}\left(\frac{13}{23}\right)$$

$$x \approx 34.4°$$

11.

Triangle ABC: $x°$, 8, 15

$$x = \tan^{-1}\left(\frac{15}{8}\right)$$

$$x \approx 61.9°$$

12.

Triangle SLU: x, 33°, 13
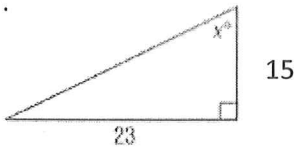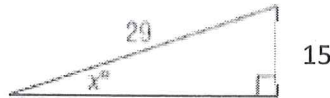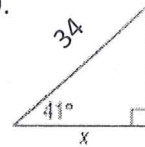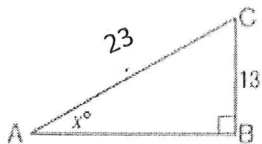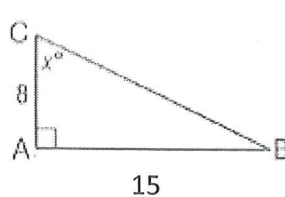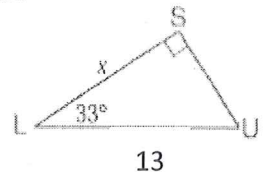
$$\cos(33) = \frac{x}{13}$$

$$x \approx 10.9$$

13. Use Triangle LMN to find *sin L, cos L, tan L, sin M, cos M,* and *tan M.* Express each ratio as a fraction. Simplify all answers!

l = 9, *m* = 12 and *n* = 15
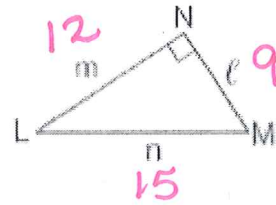
$sin\ L = \dfrac{9}{15} = \dfrac{3}{5}$

$sin\ M = \dfrac{4}{5}$

$cos\ L = \dfrac{4}{5}$

$cos\ M = \dfrac{3}{5}$

$tan\ L = \dfrac{3}{4}$

$tan\ M = \dfrac{4}{3}$

14. Use Triangle RST to find *sin R, cos R, tan R, sin S, cos S,* and *tan S.* Express each ratio as a fraction. Simplify all answers!
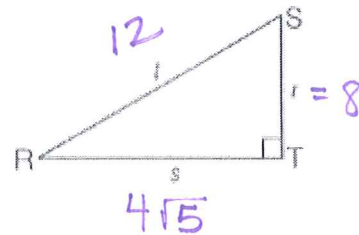
t = 12, *r* = 8 and *s* = 4√5

$sin\ R = \dfrac{8}{12} = \dfrac{2}{3}$

$sin\ S = \dfrac{\sqrt{5}}{3}$

$cos\ R = \dfrac{\sqrt{5}}{3}$

$cos\ S = \dfrac{2}{3}$

$tan\ R = \dfrac{8}{4\sqrt{5}} \cdot \dfrac{\sqrt{5}}{\sqrt{5}}$

$= \dfrac{2\sqrt{5}}{5}$

$tan\ S = \dfrac{\sqrt{5}}{2}$

15. Diego used a theodolite to map a region of land for his class in geomorphology. To determine the elevation of a vertical rock formation, he measured the distance from the base of the formation to his position and the angle between the ground and the line of sight to the top of the formation. The distance was 23 meters and the angle was 36 degrees. What is the height of the formation to the nearest meter?

$$\tan 36 = \dfrac{x}{23}$$

23 m

$$x = 16.7m$$

$$\boxed{x = 17m}$$