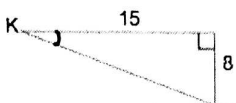Name _Kelly_

Date _____

Solve for the third side length. Then write all six trig functions for the following triangles.
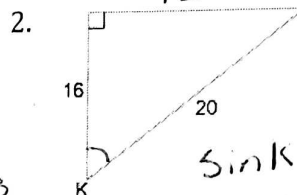
1.

$8^2 + 15^2 = c^2$

$\sin K = 8/15 \qquad \csc k = 17/8$

$\cos K = 15/17 \qquad \sec k = 17/15$

$\tan K = 8/15 \qquad \cot k = 15/8$

2.

$16^2 + b^2 = 20^2$

$b = 12$

$\csc K = 5/3$

$\sec k = 5/4$
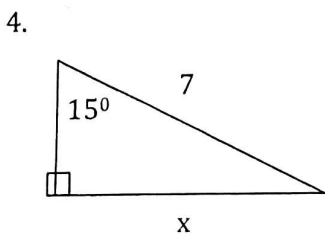
$\cot k = 4/3$

$\sin k = 12/20 = 3/5$

$\cos k = 16/20 = 4/5$

$\tan k = 12/16 = 3/4$

Label the sides of the triangles with a, b, c. Then label them with opposite, hypotenuse, adjacent using <A.
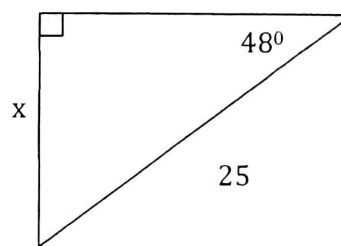
3.   A

c | adj

b

hyp.

B   opp.
           a   C

Solve for x.

4.

15^0

7

x

$x \approx 1.8$

5.

x

37^0 a

13

$\tan 37^0 = \dfrac{x}{13}$

$x \approx 9.8$

6.

48^0

x

25
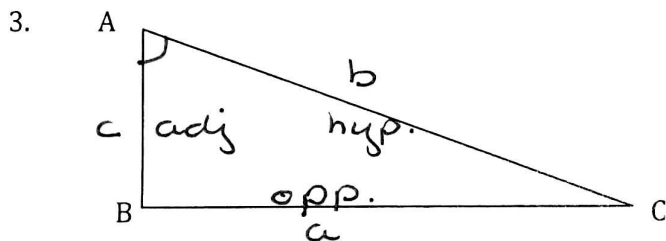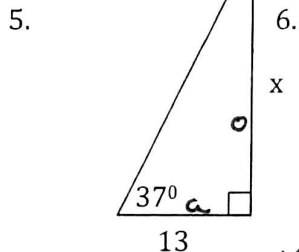
$x \approx 18.6$

Evaluate the following using a calculator. Round to 2 decimal places. Make sure your calculator is in degree mode.

7.) sin80=

0.98

8) cos37=

≈ 0.798

9) tan356=

$- 0.069$

Fill in the blank with the correct ratio (opposite, hypotenuse, adjacent)

10. $\sin \theta = \dfrac{opp}{hyp}$ 11. $\cos \theta = \dfrac{adj}{hyp}$ 12. $\tan \theta = \dfrac{opp}{adj}$
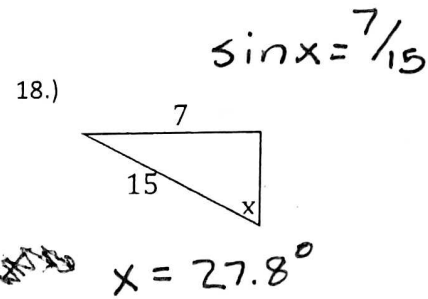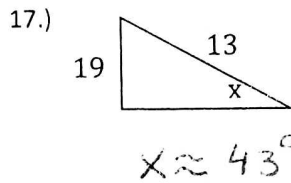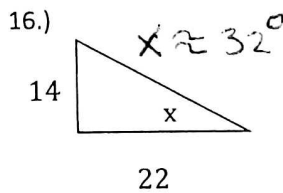
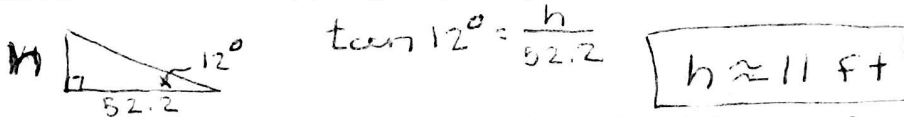13. $\csc \theta = \dfrac{hyp}{opp}$ 14. $\sec \theta = \dfrac{hyp}{adj}$ 15. $\cot \theta = \dfrac{adj}{opp}$

Find the measure of the angle x to the nearest degree.

16.) $x \approx 32°$

14 ... x ... 22

17.)   19 ... 13 ... x

$x \approx 43°$

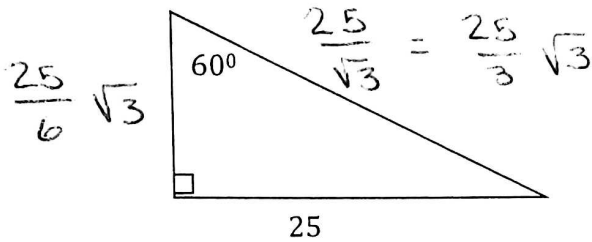$\sin x = \frac{7}{15}$

18.)   7 ... 15 ... x

$x = 27.8°$

19. The angle of elevation from the base of a waterslide to the top is about 12°. The slide extends horizontally (along the ground) about 52.2 meters. How tall is the slide?

12° 52.2
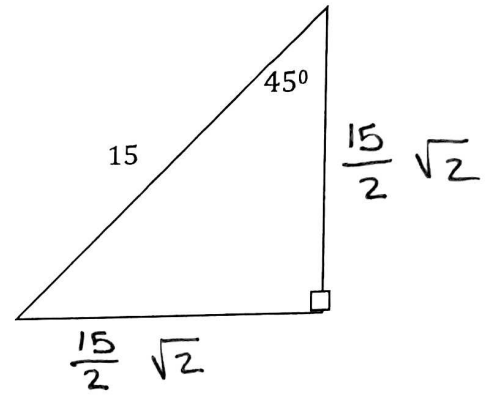
$\tan 12° = \dfrac{h}{52.2}$

$\boxed{h \approx 11 \text{ ft}}$

(21-24) Find the lengths of the missing sides of the special right triangles, given one side

21.   10 $5\sqrt{3}$ 60°   5

22.   45° $12\sqrt{2}$ 24 $12\sqrt{2}$

23.

$\dfrac{25}{6}\sqrt{3}$ 60^0 $\dfrac{25}{\sqrt{3}} = \dfrac{25}{3}\sqrt{3}$

25

24.

45^0 15 $\dfrac{15}{2}\sqrt{2}$

$\dfrac{15}{2}\sqrt{2}$
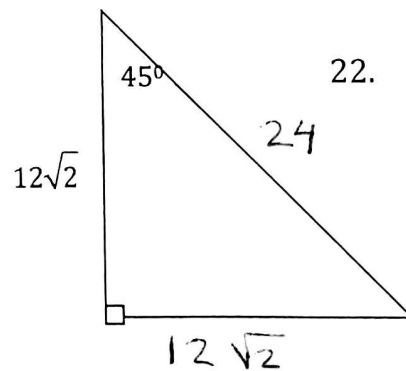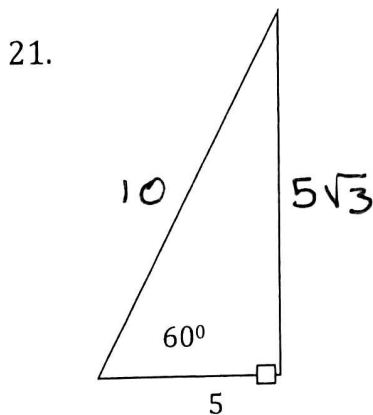
25. Solve the following triangle.

A

17   adj   b   hyp

B   10   opp   C
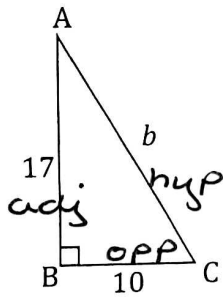
$10^2 + 17^2 = c^2$

$b = \sqrt{389}$
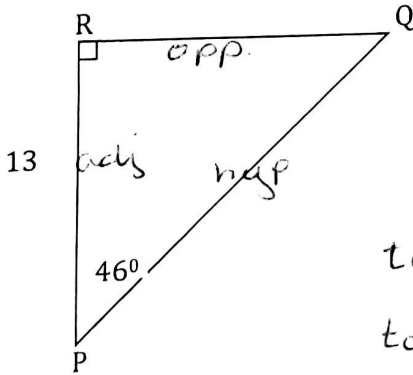
$a = 10$
$b = 19.7$
$c = 17$

$\angle A = 30^0$
$\angle B = 90^0$
$\angle C = 60^0$

$\tan A = \dfrac{10}{17}$

$\tan B = \dfrac{17}{10}$

26. Solve the following triangle.

R   opp.   Q

13   adj   hyp

46^0

P

$p = 13.5$
$q = 13$
$r = 18.7$

$\angle P = 46^0$
$\angle Q = 44^0$
$\angle R = 90^0$

$\tan \theta = \dfrac{o}{a}$

$\tan 46^0 = \dfrac{p}{13}$

$p \approx 13.5$

$\cos \theta = \dfrac{a}{r}$

$\cos 46^0 = \dfrac{13}{r}$

$r = \dfrac{13}{\cos 46^0}$

$r \approx 18.7$

check
$13^2 + 13.5^2 = 18.7^2$?
true!