Name: _____Key_____ Date:_____ Block: _____

FOM 10– Chapter 8 Practice Test   /40

Make sure your calculator is in DEGREE mode! $S\frac{O}{H}C\frac{A}{H}T\frac{O}{A}$ $a^2 + b^2 = c^2$

/1 Correct Units and Rounding (1 mark)

Notes/Steps   **Each question is written response. Show all of your work.**

1. Find each ratio to four decimal places using a calculator:

   (0.5 marks each)

      a) $\sin 37° =$ _____0.6018_____
      b) $\cos 68° =$ _____0.3746_____
      c) $\tan 18° =$ _____

2. Find the measure of each angle θ to one decimal place

   (0.5 marks each):

      a) $\sin\theta = 0.5428$ $\theta =$ _____32.9°_____
      b) $\cos\theta = 0.6367$ $\theta =$ _____50.5°_____
      c) $\tan\theta = 2.1476$ $\theta =$ _____65.0°_____

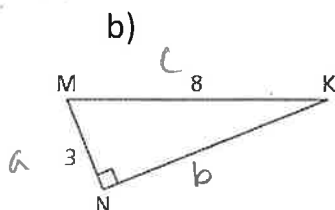3. Use Pythagoras to find the measure of the missing side to one decimal place. (2 marks each)

   a)

   X

   b 12

   C

   Y ⌐ Z
      6
      a
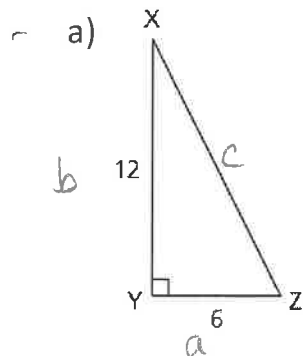
   $a^2 + b^2 = c^2$
   $6^2 + 12^2 = c^2$
   $36 + 144 = c^2$
   $C = \sqrt{180}$

   $y =$ _____13.4_____

   b)

   C
   M   8   K

   a 3   b

   N

   $b^2 = c^2 - a^2$
   $b^2 = 8^2 - 3^2$
   $b^2 = 64 - 9$
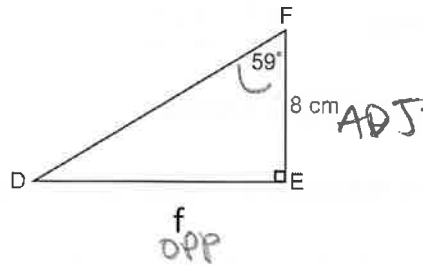 $b = \sqrt{55}$

   $m =$ _____7.4_____

Notes/Steps   **Each question is written response. Show all of your work.**

4. Determine the measure of the indicated **side** in each triangle.
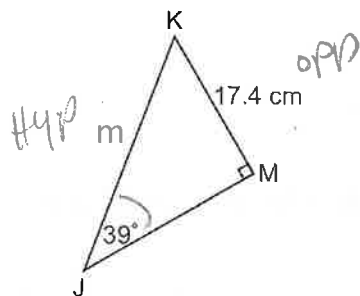   **Round to the nearest tenth.** (2 marks each)

a)

$$\text{Tan } 59 = \frac{f}{8}$$
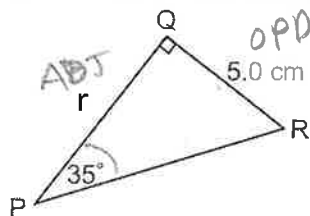
$$f = 8 \tan 59.$$

$$f = \underline{13.3 \text{ cm}}$$

b)

$$\text{Sin } 39 = \frac{17.4}{m}$$

$$m = \frac{17.4}{\sin 39}$$

$$m = \frac{17.4}{0.6293}$$

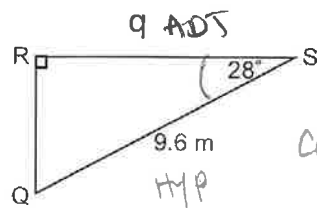$$m = \underline{27.6 \text{ cm}}$$

c)

$$\tan 35 = \frac{5}{r}$$

$$r = \frac{5}{\tan 35}$$

$$r = \underline{7.1 \text{ cm}}$$
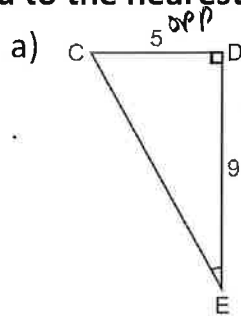
d)

$$\cos 28 = \frac{q}{9.6}$$

$$q = 9.6 \cos 28$$

$$q = \underline{8.5 \text{ cm}}$$

Notes/Steps   **Each question is written response. Show all of your work.**

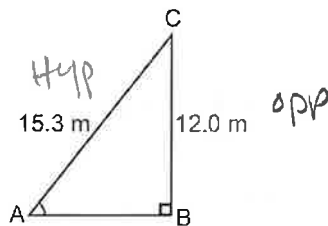5. Determine the measure of the indicated **angle** in each triangle.
    Round to the nearest tenth. (2 marks each)

a)

C —— 5 —— D   opp

opp J

$\tan \theta = \frac{5}{9}$

9

$\theta = \tan^{-1}\left(\frac{5}{9}\right)$

E

$E = \underline{29.1°}$

b)

C

Hyp

15.3 m   12.0 m opp

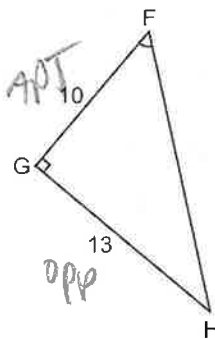A   B

$\sin \theta = \frac{12.0}{15.3}$

$\theta = \sin^{-1}\left(\frac{12.0}{15.3}\right)$

$A = \underline{51.7°}$

c)

F

APT 10

G

13

opp

H

$\tan \theta = \frac{13}{10}$

$\theta = \tan^{-1}\left(\frac{13}{10}\right)$

$F = \underline{52.4°}$

d)

X   APT
    9.9 cm
              Y
W   11.7 cm
        Hyp
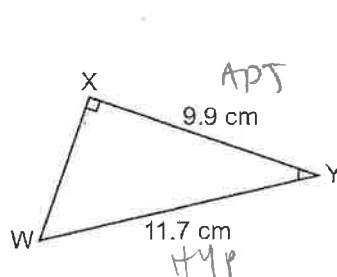
$\cos \theta = \frac{9.9}{11.7}$

$\theta = \cos^{-1}\left(\frac{9.9}{11.7}\right)$
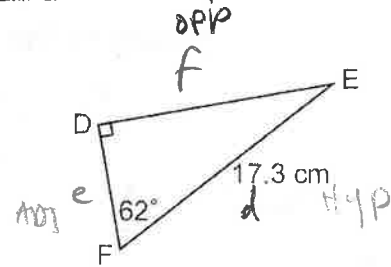
$Y = \underline{32.7°}$

Notes/Steps   **Each question is written response. Show all of your work.**

6. **Solve** the following triangles to one decimal place: (3 marks each)

a)

<D = $90°$	d = 17.3
<E = $28°$	e = 8.1 cm
<F = $62°$	f = 15.3 cm

$\angle E = 180 - 90 - 62$

$= 28°$

side e

$\cos 62 = \dfrac{e}{17.3}$

$e = 17.3 \cos 62$

$= 8.1$ cm

side f

$\sin 62 = \dfrac{f}{17.3}$

$f = 17.3 \sin 62$

$f = 15.3$ cm

b)

<A = 90	a = 19.2 cm
<B = $50.5°$	b = 14.8 cm
<C = $39.5°$	c = 12.2 cm
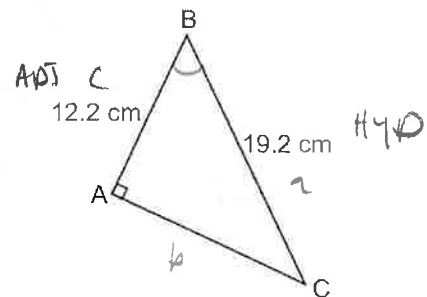
$\angle B = \cos\theta - \dfrac{ADJ}{HYP}$

$\cos B = \dfrac{12.2}{19.2}$

$\angle B = \cos^{-1}\left(\dfrac{12.2}{19.2}\right)$

$= 50.4°$

$\angle C = 180 - 90 - 50.4°$

$= 39.6°$

side b

$12.2^2 + b^2 = 19.2^2$
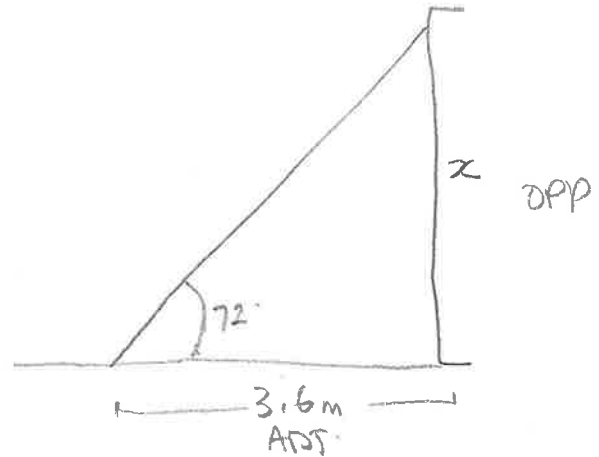
$19.2^2 - 12.2^2 = b^2$

$b = \sqrt{219.8}$

$b = 14.8$ cm

7. A ladder leans against a wall. The base of the ladder is on level ground 3.6m from the wall. The angle between the ladder and the ground is 72°. How far up the wall does the ladder reach (to the nearest tenth of a metre)? (2 marks)

$$\tan \theta = \frac{opp}{ADJ}$$

$$\tan 72 = \frac{x}{3.6}$$
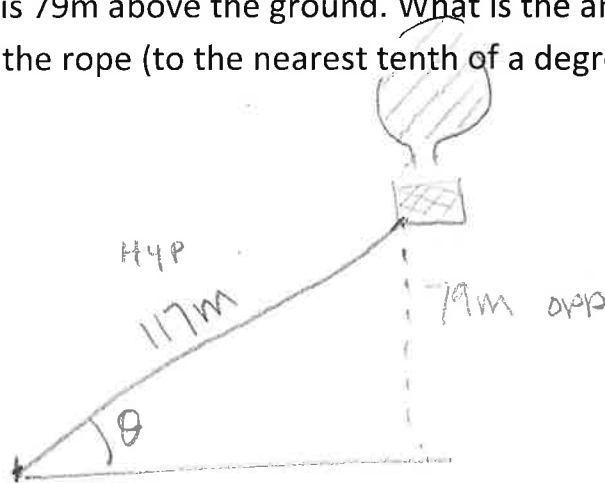
$$x = 3.6 \tan 72$$

$$x = 11.1 \, m$$

Sentence answer:
The ladder reaches 11.1 m up the wall

8. A rope that anchors a hot air balloon to the ground is 117m long. The balloon is 79m above the ground. What is the angle of elevation of the rope (to the nearest tenth of a degree)? (2 marks)

$$\sin \theta = \frac{OPP}{HYP}$$

$$\sin \theta = \frac{79}{117}$$

$$\theta = \sin^{-1}\left(\frac{79}{117}\right)$$

$$= 42.5°$$

Sentence answer:
The angle of elevation of the rope is 42.5°

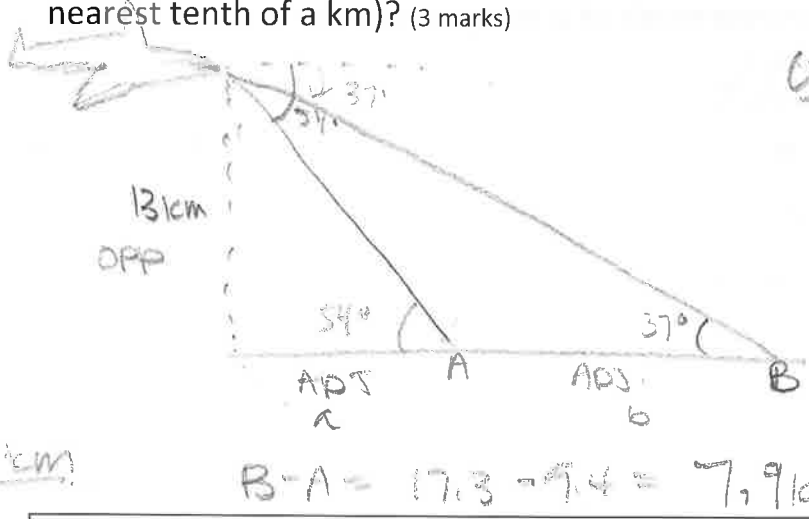**Each question is written response. Show all of your work.**

9. A passenger in an airplane flying at an altitude of 13 km spots two cities directly to the right. The angle of depression to the towns are 37° and 54°. How far is it between the two cities (to the nearest tenth of a km)? (3 marks)

City A

$\tan\theta = \dfrac{opp}{ADJ}$

$\tan 54 = \dfrac{13}{a}$

$a = \dfrac{13}{\tan 54} = 9.44$ cm

13 cm
OPP

54°   A   37°
ADJ   a   ADJ   b   B

City B

$\tan 37 = \dfrac{13}{b}$

$b = \dfrac{13}{\tan 37}$

$= 17.3$ km

$B - A = 17.3 - 9.4 = 7.9$ cm

Sentence answer:
There is 7.9 km between the two cities.

10. An isosceles triangle has a base of 28 in. If the two equal sides meet at an angle of 34°, how long are they (to the nearest inch)? (3 marks)

$\ell = ?$

hyp ℓ 34° ℓ
        17°

28

14
opp

$\sin\theta = \dfrac{opp}{Hyp}$

$\sin 17 = \dfrac{14}{\ell}$

$\ell = 14 / \sin 17$

$\ell = 47.88 \approx 48$

Sentence answer:
the length of each side is 48 inches