

FOM 10 Linear – Chapter 8 Practice Test

/40

$$S \frac{O}{H} C \frac{A}{H} T \frac{O}{A}$$

$$a^2 + b^2 = c^2$$

* Check Calc. in DEGREE Mode.

/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) $\sin 37^\circ = \underline{0.6018}$

b) $\cos 68^\circ = \underline{0.3746}$

c) $\tan 18^\circ = \underline{0.3249}$

Just type it in! 😊

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

(0.5 marks each):

a) $\sin \theta = 0.5428 \quad \theta = 32.8744 \quad \theta = \underline{32.9^\circ}$

b) $\cos \theta = 0.6367 \quad \theta = 50.4538 \quad \theta = \underline{50.5^\circ}$

c) $\tan \theta = 2.1476 \quad \theta = 65.0316 \quad \theta = \underline{65.0^\circ}$

Use \sin^{-1}
 \cos^{-1}
 \tan^{-1}

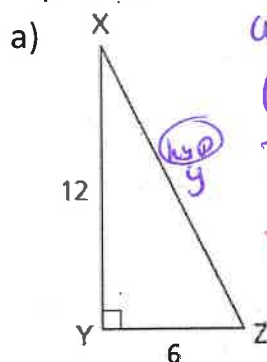
Careful rounding!

Next place

01234 / 56789
"keep" round up

Pythag:
use $a^2 + b^2 = c^2$
to find hyp

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



$$a^2 + b^2 = c^2$$

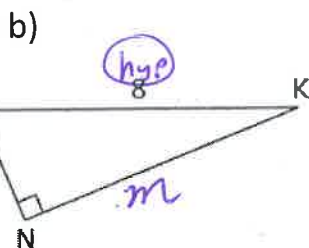
$$6^2 + 12^2 = y^2$$

$$36 + 144 = y^2$$

$$\sqrt{180} = \sqrt{y^2}$$

$$y = 13.416$$

$$y = \underline{13.4}$$



$$a^2 = c^2 - b^2$$

$$m^2 = 8^2 - 3^2$$

$$m^2 = 64 - 9$$

$$\sqrt{m^2} = \sqrt{55}$$

$$m = 7.416$$

$$m = \underline{7.4}$$

Can use hyp!
 $a^2 = c^2 - b^2$
to find a short side

13

14

17

To find a SIDE:

① Stand at given angle.

Label
OPP/ADJ/HYP.

② decide if you need

$\frac{S}{H}$ | $\frac{A}{H}$ | $\frac{O}{A}$
or or

③ write formula

④ Fill in knowns (2 of 3)

⑤ Solve for missing side.

* If x on top, MULTIPLY.

* If x on bottom, switch x with sin/cos/tan and divide.

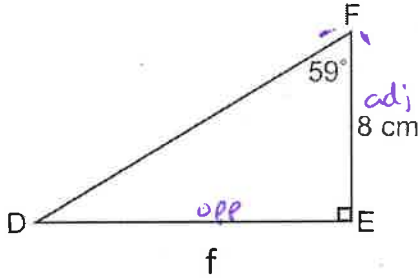
⑥ Remember rounding and units.

* Careful!

4. Determine the measure of the indicated side in each triangle.

Round to the nearest tenth. (2 marks each)

a)



$$\tan \theta = \frac{O}{A}$$

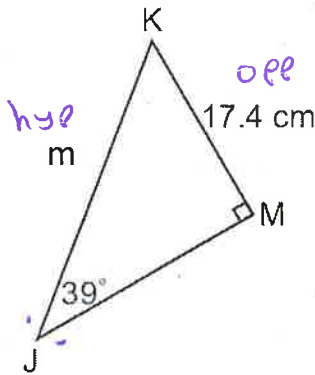
$$8 \cdot \tan 59 = \frac{f}{8}$$

$$f = 8 \tan 59$$

$$f = 13.314$$

$f = \underline{13.3 \text{ cm}}$ ✓

b)



$$\sin \theta = \frac{O}{H}$$

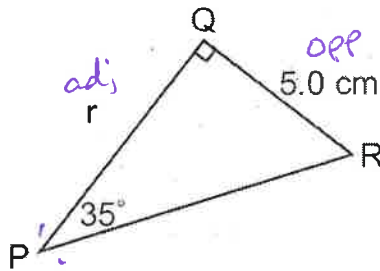
$$\sin 39 = \frac{17.4}{m}$$

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

$$m = 27.6488$$

$m = \underline{27.6 \text{ cm}}$ ✓

c)



$$\tan \theta = \frac{O}{A}$$

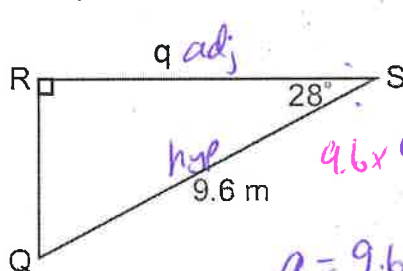
$$\tan 35 = \frac{5}{r}$$

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

$$r = 7.1407$$

$r = \underline{7.1 \text{ cm}}$ ✓

d)



$$\cos \theta = \frac{A}{H}$$

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

$$q = 9.6 \cos 28$$

$$q = 8.4763$$

$q = \underline{8.5 \text{ m}}$ ✓

Notes/Steps

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

To find
on ANGLE:

① Stand at
MISSING
angle.
Label
OPP/ADJ/HYP.

② decide
SOH
or
CAH
or
TA

③ Write
formula

④ Fill in knowns
(2 of 3)

⑤ solve for
missing
angle

(use \square^{-1})

2nd or Shift

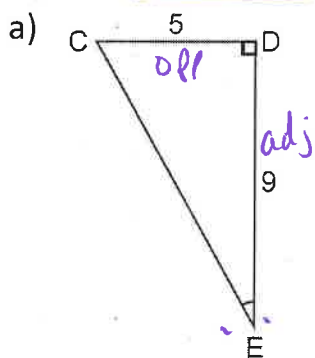
button for

\sin^{-1}
 \cos^{-1}
 \tan^{-1}

⑥ Check
rounding
and
units.

5. Determine the measure of the indicated angle in each triangle.

Round to the nearest tenth. (2 marks each)



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

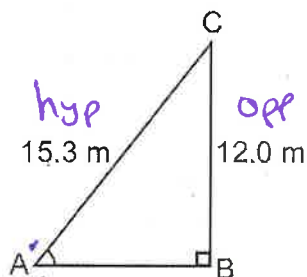
$$\tan E = \frac{5}{9}$$

$$E = \tan^{-1}(5/9)$$

$$E = 29.0546$$

$$E = \underline{29.1^\circ}$$

b)



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

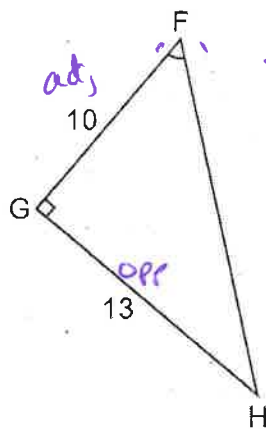
$$\sin A = \frac{12.0}{15.3}$$

$$A = \sin^{-1}(12.0/15.3)$$

$$A = 51.657$$

$$A = \underline{51.7^\circ}$$

c)



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

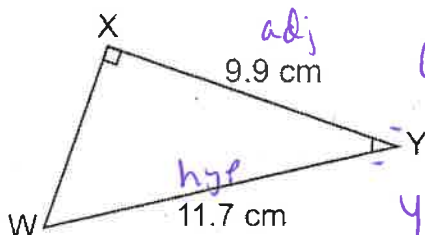
$$\tan F = \frac{13}{10}$$

$$F = \tan^{-1}(13/10)$$

$$F = 52.431$$

$$F = \underline{52.4^\circ}$$

d)



$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos Y = \frac{9.9}{11.7}$$

$$Y = \cos^{-1}(9.9/11.7)$$

$$Y = 32.204$$

$$Y = \underline{32.2^\circ}$$

Notes/Steps

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

Solve =
Find all 3
angles &
all 3 sides.

① List all
known
values.

Remember -
sides & angles
across from ea/o
have same letter!
(Put in units for
unknowns so you
don't forget :))

② If you have
2 angles, find
3rd with
 $180^\circ - 90^\circ - \text{angle}$.

If you have
2 sides, use
Pythagoras
to get 3rd.

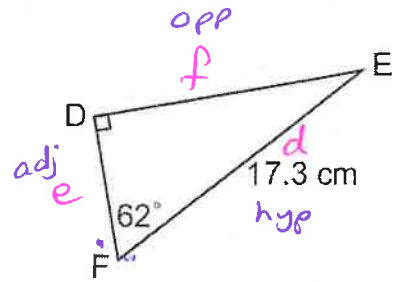
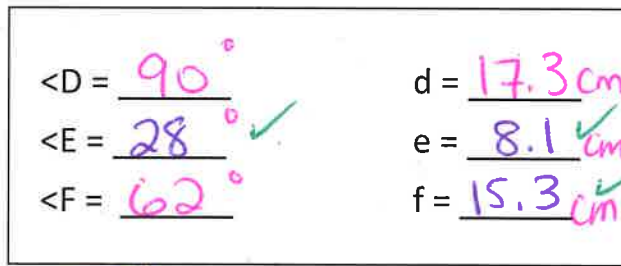
③ Find
remaining
missing pieces
by using
Soh CAH TA.

④ Remember
units and
rounding.

⑤ Use original
info when
possible.

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

a)



$\angle E = 180^\circ - 90^\circ - 62^\circ = 28^\circ$

$\cos \theta = \frac{A}{H}$

$17.3 \times \cos 62^\circ = \frac{e}{17.3} \times 17.3$

$e = 17.3 \cos 62^\circ$

$e = 8.1219$

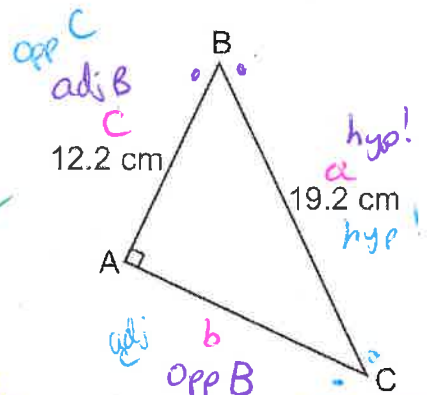
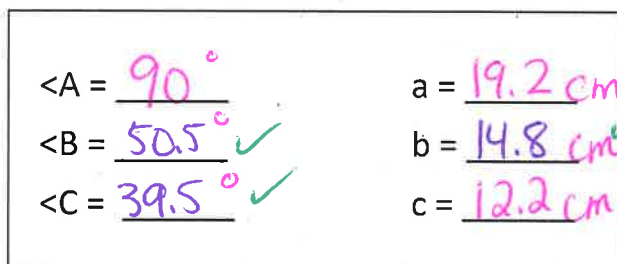
$\sin \theta = \frac{O}{H}$

$17.3 \times \sin 62^\circ = \frac{f}{17.3} \times 17.3$

$f = 17.3 \sin 62^\circ$

$f = 15.274$

b)



$a^2 = c^2 + b^2$
*careful. In this Δ ,
c is not the hyp.

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

$\sqrt{b^2} = \sqrt{219.8}$

$b = 14.825$

$\cos \theta = \frac{\text{Adj}}{\text{Hyp}}$

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

$B = \cos^{-1}(12.2/19.2)$

$B = 50.549$

$B = 50.5$

$\angle C = 180^\circ - 90^\circ - 50.5^\circ = 39.5^\circ$

or $\sin \theta = \frac{\text{Opp}}{\text{Hyp}}$

$\sin C = \frac{12.2}{19.2}$

$C = \sin^{-1}(12.2/19.2)$

$C = 39.5$

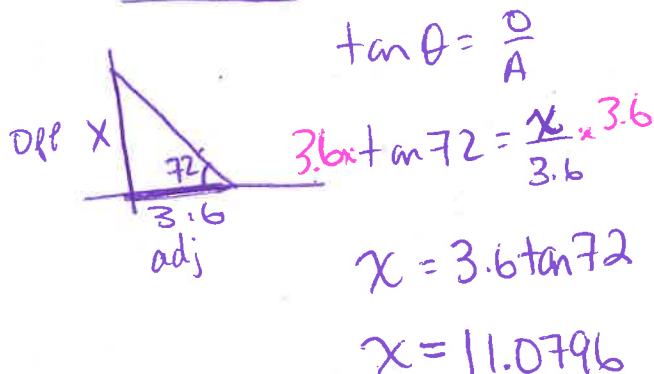
$\angle B = 180^\circ - 90^\circ - 39.5^\circ = 50.5$

Draw a picture!
Read carefully.

Make a note of different "types" of problems we have seen.

Remember units, rounding, sentence.

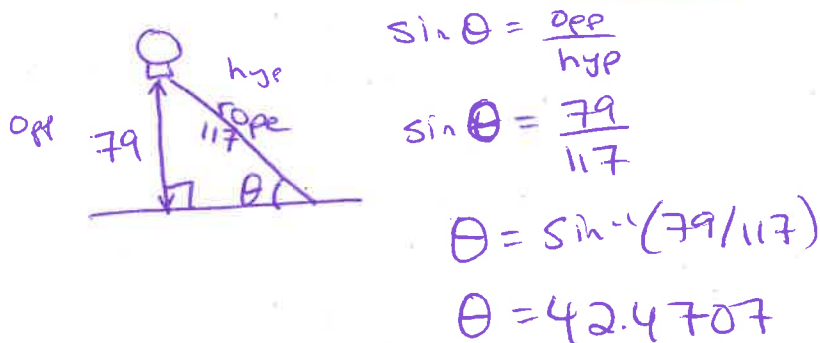
7. A ladder leans against a wall. The base of the ladder is on level ground 3.6m from the wall. The angle between the ladder and the ground is 72° . How far up the wall does the ladder reach, to the nearest tenth of a metre? (2 marks)



Sentence answer:

The ladder reaches 11.1m 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)



Sentence answer:

The angle of elevation of the rope is 42.5°.

Notes/Steps

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

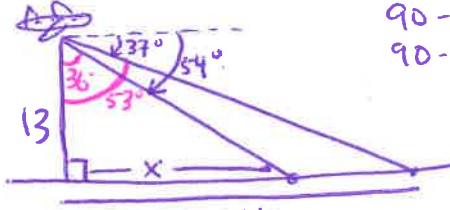
Identify a plan (may include multiple Δ s or parts of a Δ).

Make sure you only use SOHCAHTOA on RIGHT triangles.

Write down "plans" for different types of problems we've seen!

* "Nearest inch" (nearest unit) means round to whole # (no decimal places)

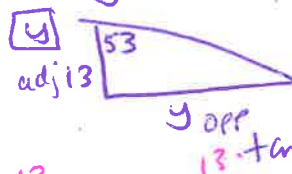
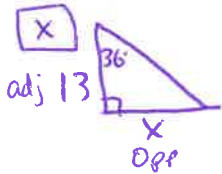
9. A passenger in an airplane flying at an altitude of 13 km spots two cities directly to the right. The angle of depression to the towns are 37° and 54° . How far is it between the two cities? (3 marks) *(nearest tenth)*



$90 - 37 = 53$
 $90 - 54 = 36$

Plan: distance between is $y - x$.

$y - x = 17.252 - 9.441 = 7.8065$



$13 \cdot \tan 36 = \frac{x \cdot 13}{13}$

$13 \cdot \tan 53 = \frac{y \cdot 13}{13}$

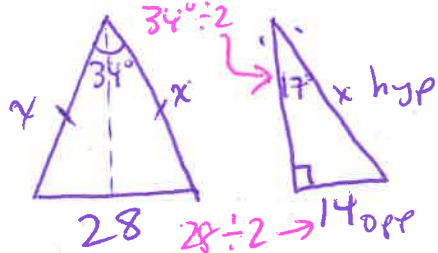
$x = 13 \cdot \tan 36 = 9.445$

$y = 13 \cdot \tan 53 = 17.252$

Sentence answer:

The cities are 7.8 km apart.

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? (3 marks) *(Nearest inch)*



$\sin \theta = \frac{opp}{hyp}$

$\sin 17^\circ = \frac{14}{x}$

$x = \frac{14}{\sin 17}$

$x = 47.884$

Sentence answer:

Each of the two equal sides measure 48 inches.