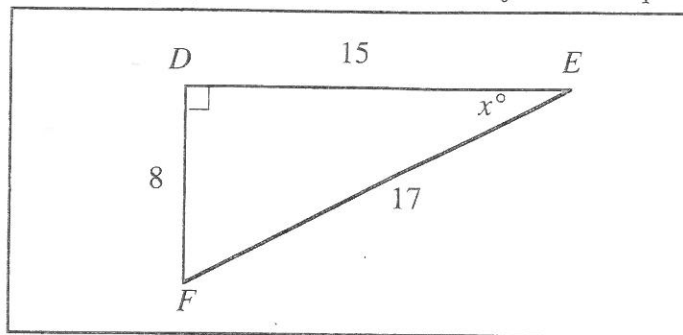


Trigonometry Lesson #8: Practice Test

Use the following information to answer the first three questions.



1. The value of $\cos F$ is

A. $\frac{8}{15}$
B. $\frac{8}{17}$
C. $\frac{17}{8}$
D. 62

2. The value of x is

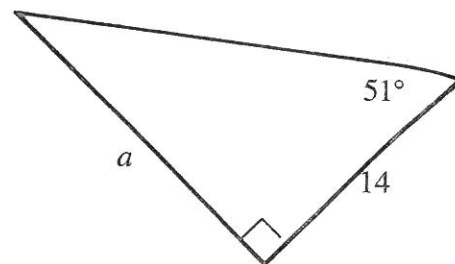
A. $\frac{15}{17}$
B. $\frac{8}{17}$
C. 28
D. 62

3. Which statement is false?

A. $\cos E = \sin F$
B. $\sin E = \cos F$
C. $\tan E = \tan F$
D. $\tan F = \frac{\sin F}{\cos F}$

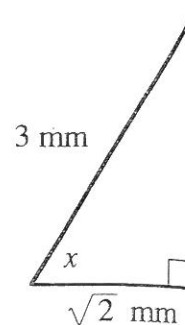
4. The value of a is

- A. $14 \tan 51^\circ$
- B. $\frac{14}{\tan 51^\circ}$
- C. $14 \cos 51^\circ$
- D. $\frac{14}{\cos 51^\circ}$



5. The value of x , to the nearest tenth of a degree, is

- A. 35.0°
- B. 61.9°
- C. 72.3°
- D. 29.3°

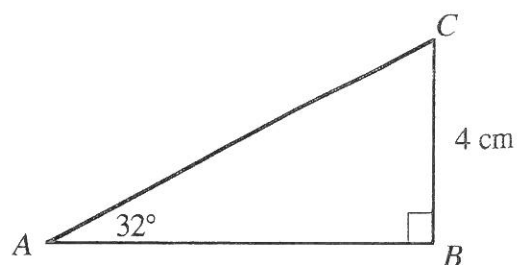


6. A guy wire to a pole makes an angle of 71.4° with the level ground and is 13.8 feet from the pole at ground level. How far above the ground is the guy wire attached to the pole?

- A. 4.6 feet
- B. 13.1 feet
- C. 14.6 feet
- D. 41.0 feet

7. The value of length AC , to the nearest tenth, is

- A. 0.1
- B. 2.1
- C. 7.2
- D. 7.5

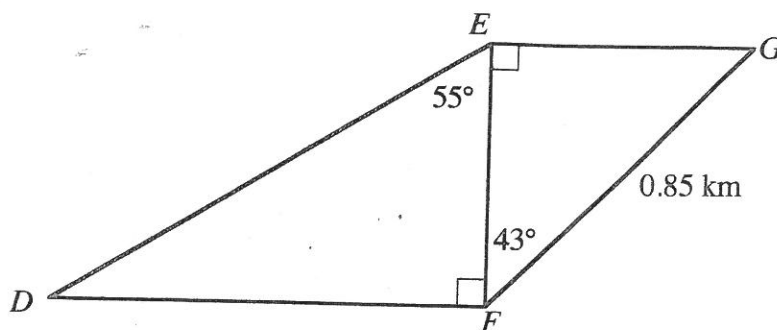


8. A man, six feet tall, casts a shadow of 10.6 feet. The angle of elevation of the sun is

- A. 30°
- B. 34°
- C. 56°
- D. 60°

Use the following information to answer the next three questions.

The diagram shows how a horse breeder has used fencing to divide a parcel of land into two triangular paddocks for his horses. Each of the line segments represents fencing.



9. The length of the fencing represented by DF is
- A. 0.89 km
 - B. 0.79 km
 - C. 0.62 km
 - D. 0.58 km
10. The value of $\cos G$ is
- A. 0.68
 - B. 0.72
 - C. 0.80
 - D. impossible to determine from the given information.

Numerical
Response

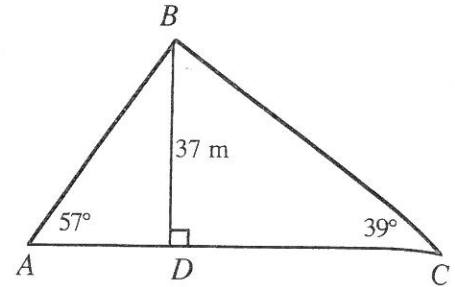
1. The total area of the two triangular paddocks, to the nearest 0.1 km^2 , is _____.

(Record your answer in the numerical response box from left to right)

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11. The length of AC , to the nearest metre, is

- A. 54 m
- B. 70 m
- C. 87 m
- D. 103 m

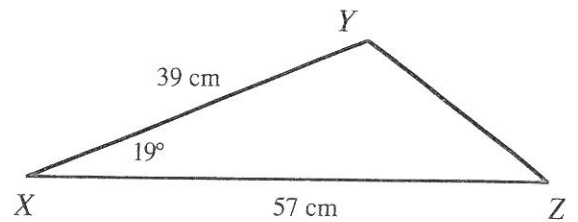


Numerical
Response

2. Determine the area of the following triangle to the nearest square centimetre.

(Record your answer in the numerical response box from left to right)

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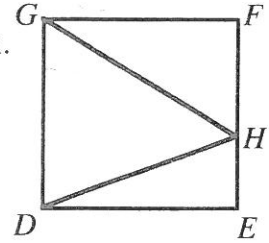
12. $\triangle ABC$ is isosceles with $AB = CB$. The area of the triangle is 30 cm^2 and $AC = 12 \text{ cm}$. The measure of $\angle ABC$, to the nearest degree, is

- A. 100°
- B. 50°
- C. 45°
- D. 23°

Numerical
Response

3.

In the diagram, $DEFG$ is a square of side 12 cm and $GH = 15$ cm. To the nearest degree, the difference between the measures of $\angle HGF$ and $\angle HDE$ is _____.



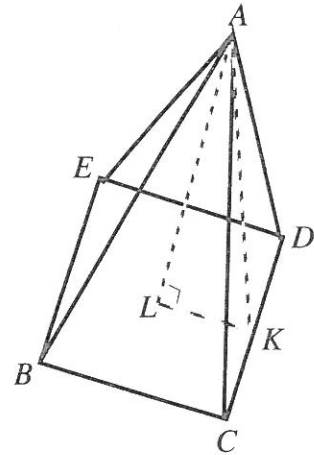
(Record your answer in the numerical response box from left to right)

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Numerical
Response

4.

$ABCDE$ is a square based pyramid with vertical height 14 cm. K is the midpoint of CD and angle $AKL = 70^\circ$. To the nearest degree, the measure of angle ACK is _____.



(Record your answer in the numerical response box from left to right)

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13. From a lighthouse window 30.0 m above sea level, the angles of depression of two buoys which are in a direct line from the lighthouse are 15° and 26° respectively. To the nearest tenth of a metre, the distance between the buoys is _____.

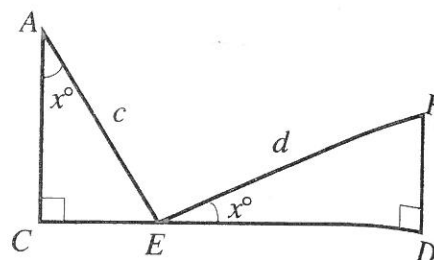
- A. 173.5
B. 165.5
C. 50.5
D. 24.4



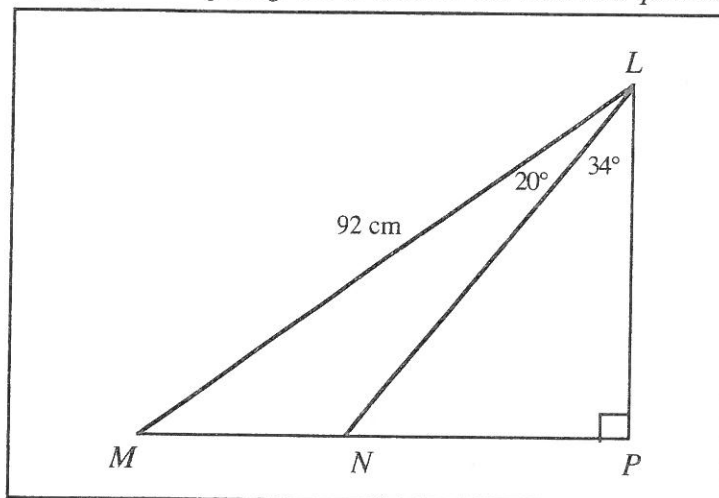
**Multiple
Choice**

14. From the diagram, the length of CD is

- A. $c \sin x^\circ + d \cos x^\circ$
- B. $c \cos x^\circ + d \sin x^\circ$
- C. $(c + d) \cos x^\circ$
- D. $(c + d) \sin x^\circ$



Use the following diagram to answer the next two questions.



15. The length of LP , to the nearest centimetre, is

- A. 51 cm
- B. 54 cm
- C. 74 cm
- D. 76 cm

**Numerical
Response**

5. The length of MN , to the nearest centimetre, is

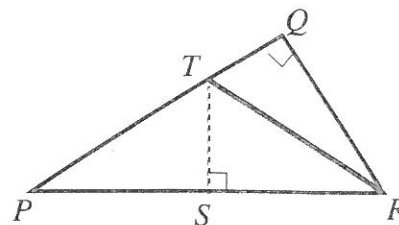
(Record your answer in the numerical response box from left to right)

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Written Response - 5 marks

1. In the diagram $PQ = 16$ m, $QR = 12$ m, and $PT = TR$.

- Make a sketch of triangle PQR only and determine the exact length of PR .



- Explain why you cannot use only triangle QRT to determine the measure of $\angle QRT$.

- Calculate the measure of $\angle QPR$ and use it to determine the measure of $\angle QRT$ to the nearest degree.

- Calculate the length of PT to the nearest tenth of a metre.

Answer Key

1. B 2. C 3. C 4. A 5. B 6. D 7. D 8. A
9. A 10. A 11. B 12. A 13. C 14. A 15. B

1.

0	.	5	
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 2.

3	6	2	
---	---	---	--

 3.

2	3		
---	---	--	--

4.

7	1		
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 5.

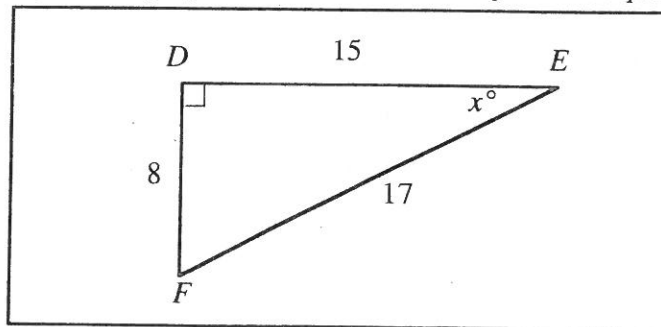
3	8		
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Written Response

1. • 20 m
• In triangle QRT , only two pieces of information are given, $\angle TQR$ and side QR .
This is not enough information to calculate $\angle QRT$.
• $\angle QPR = 37^\circ$, $\angle QRT = 16^\circ$.
• 12.5 metres.

Trigonometry Lesson #8: Practice Test

Use the following information to answer the first three questions.



1. The value of $\cos F$ is

A. $\frac{8}{15}$
 B. $\frac{8}{17}$
 C. $\frac{17}{8}$
 D. 62

$\cos F = \frac{\text{adj}}{\text{hyp}} = \frac{8}{17}$

2. The value of x is

A. $\frac{15}{17}$
 B. $\frac{8}{17}$
 C. 28
 D. 62

$\sin x^\circ = \frac{8}{17}$
 $x^\circ = 28^\circ$

3. Which statement is false?

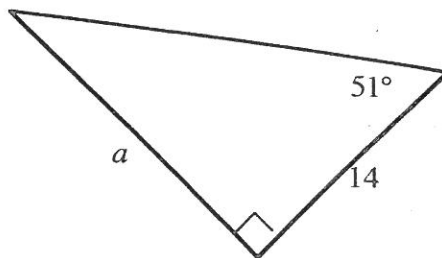
A. $\cos E = \sin F$ ✓ $\cos E = \frac{15}{17}$ $\sin F = \frac{15}{17}$
 B. $\sin E = \cos F$ ✓ $\sin E = \frac{8}{17}$ $\cos F = \frac{8}{17}$
 C. $\tan E = \tan F$ $\tan E = \frac{8}{15}$ $\tan F = \frac{15}{8}$
 D. $\tan F = \frac{\sin F}{\cos F}$ ✓ $\tan F = \frac{15}{8}$ $\frac{\sin F}{\cos F} = \frac{15/17}{8/17} = \frac{15}{8}$

4. The value of a is

- (A) $14 \tan 51^\circ$
 (B) $\frac{14}{\tan 51^\circ}$
 (C) $14 \cos 51^\circ$
 (D) $\frac{14}{\cos 51^\circ}$

$$\tan 51^\circ = \frac{a}{14}$$

$$a = 14 \tan 51^\circ$$

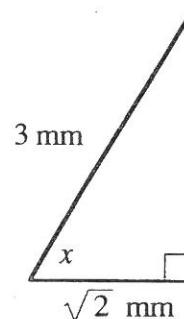


5. The value of x , to the nearest tenth of a degree, is

- (A) 35.0°
 (B) 61.9°
 (C) 72.3°
 (D) 29.3°

$$\cos x = \frac{\sqrt{2}}{3}$$

$$x = 61.9^\circ$$



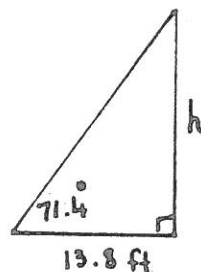
6. A guy wire to a pole makes an angle of 71.4° with the level ground and is 13.8 feet from the pole at ground level. How far above the ground is the guy wire attached to the pole?

- (A) 4.6 feet
 (B) 13.1 feet
 (C) 14.6 feet
 (D) 41.0 feet

$$\tan 71.4^\circ = \frac{h}{13.8}$$

$$h = 13.8 \tan 71.4^\circ$$

$$= 41.0$$



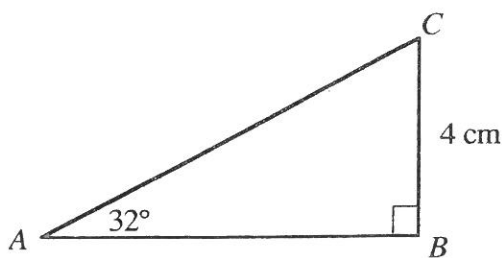
7. The value of length AC , to the nearest tenth, is

- (A) 0.1
 (B) 2.1
 (C) 7.2
 (D) 7.5

$$\sin 32^\circ = \frac{4}{AC}$$

$$AC = \frac{4}{\sin 32^\circ}$$

$$= 7.54...$$

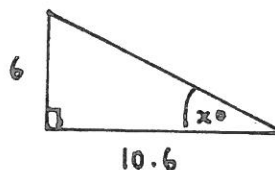


8. A man, six feet tall, casts a shadow of 10.6 feet. The angle of elevation of the sun is

- (A) 30°
 (B) 34°
 (C) 56°
 (D) 60°

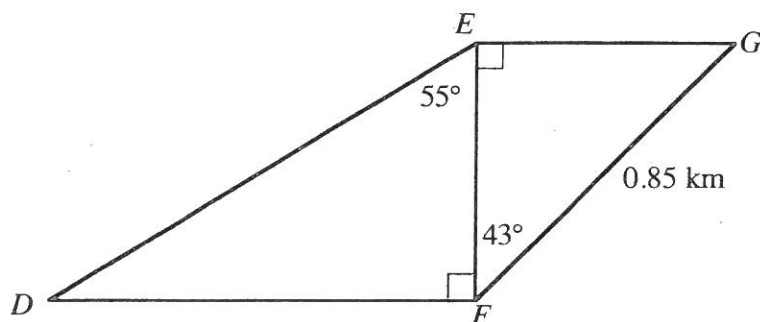
$$\tan x^\circ = \frac{6}{10.6}$$

$$x^\circ = 29.51...$$



Use the following information to answer the next three questions.

The diagram shows how a horse breeder has used fencing to divide a parcel of land into two triangular paddocks for his horses. Each of the line segments represents fencing.



9. The length of the fencing represented by DF is

- (A) 0.89 km
B. 0.79 km
C. 0.62 km
D. 0.58 km

$$\cos 43^\circ = \frac{EF}{0.85} \quad EF = 0.85 \cos 43^\circ = 0.62 \dots$$

$$\tan 55^\circ = \frac{DF}{0.62 \dots} \quad DF = 0.62 \dots \tan 55^\circ = 0.89$$

10. The value of $\cos G$ is

- (A) 0.68
B. 0.72
C. 0.80

$$\angle EGF = 180^\circ - 90^\circ - 43^\circ = 47^\circ$$

$$\cos 47^\circ = 0.68 \dots$$

- D. impossible to determine from the given information.

Numerical Response

1. The total area of the two triangular paddocks, to the nearest 0.1 km^2 , is _____.

(Record your answer in the numerical response box from left to right)

0	.	5	
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$$\sin 43^\circ = \frac{EG}{0.85} \quad EG = 0.85 \sin 43^\circ = 0.579 \dots$$

$$\begin{aligned} \text{total area} &= \frac{1}{2} (DF)(EF) + \frac{1}{2} (EF)(EG) \\ &= \frac{1}{2} (0.89)(0.62) + \frac{1}{2} (0.62)(0.58) = 0.455 \dots \text{ km}^2 \end{aligned}$$

11. The length of AC , to the nearest metre, is

- A. 54 m
- ☒ B. 70 m
- C. 87 m
- D. 103 m

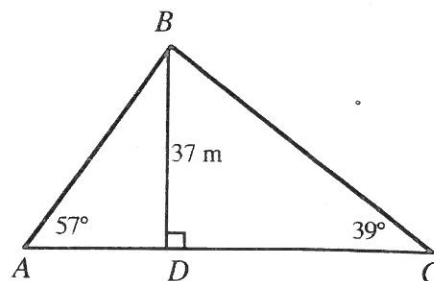
$$\tan 57^\circ = \frac{37}{AD}$$

$$\tan 39^\circ = \frac{37}{DC}$$

$$AD = \frac{37}{\tan 57^\circ} = 24.02...$$

$$DC = \frac{37}{\tan 39^\circ} = 45.69...$$

$$AC = AD + DC = 24.02... + 45.69... = 69.7... \approx 70 \text{ m}$$



Numerical Response

2. Determine the area of the following triangle to the nearest square centimetre.

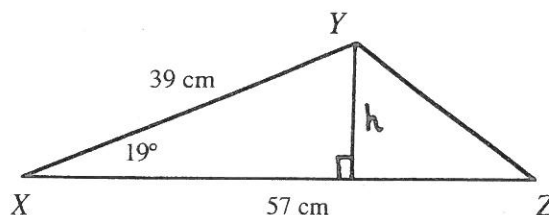
(Record your answer in the numerical response box from left to right)

3	6	2	
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$$\sin 19^\circ = \frac{h}{39}$$

$$h = 39 \sin 19^\circ = 12.697...$$

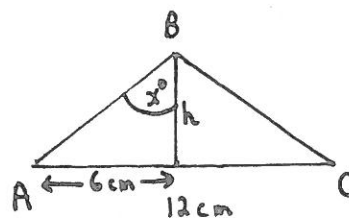
$$\begin{aligned} \text{Area} &= \frac{1}{2}bh \\ &= \frac{1}{2}(57)(12.697...) \\ &= 361.869... \\ &\approx 362 \text{ cm}^2 \end{aligned}$$



12. $\triangle ABC$ is isosceles with $AB = CB$. The area of the triangle is 30 cm^2 and $AC = 12 \text{ cm}$. The measure of $\angle ABC$, to the nearest degree, is

- ☒ A. 100°
- B. 50°
- C. 45°
- D. 23°

$$\begin{aligned} \text{Area} &= \frac{1}{2}bh \\ 30 &= \frac{1}{2}(12)(h) \\ 30 &= 6h \\ h &= 5 \text{ cm} \end{aligned}$$



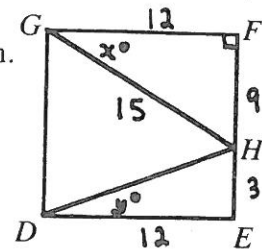
$$\tan x^\circ = \frac{5}{6}$$

$$x^\circ = 50.19...$$

$$\angle ABC = 2(50.19...) = 100.38...$$

Numerical Response

3. In the diagram, $DEFG$ is a square of side 12 cm and $GH = 15$ cm. To the nearest degree, the difference between the measures of $\angle HGF$ and $\angle HDE$ is _____.



$$FH^2 = 15^2 - 12^2 = 81$$

$$FH = \sqrt{81} = 9 \text{ cm}$$

$$HE = 12 - 9 = 3 \text{ cm}$$

$$\sin x^\circ = \frac{9}{15}$$

$$x^\circ = 36.86...$$

$$\tan y^\circ = \frac{3}{12}$$

$$y^\circ = 14.03^\circ$$

Difference $x - y$

$$= 36.86... - 14.03...$$

$$= 22.83... \approx 23^\circ$$

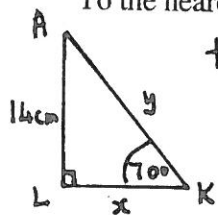
(Record your answer in the numerical response box from left to right)

2	3		
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Numerical Response

4. $ABCDE$ is a square based pyramid with vertical height 14 cm. K is the midpoint of CD and angle $AKL = 70^\circ$.

To the nearest degree, the measure of angle ACK is _____.

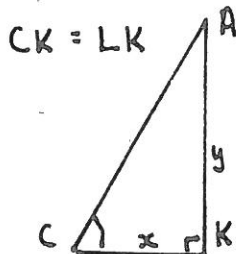


$$\tan 70^\circ = \frac{14}{x}$$

$$x = \frac{14}{\tan 70^\circ} = 5.095...$$

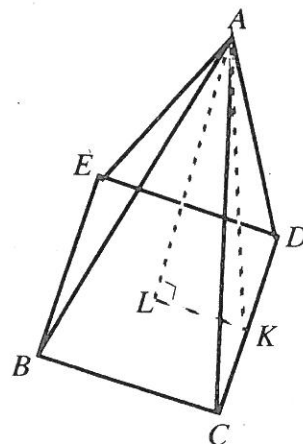
$$\sin 70^\circ = \frac{14}{y}$$

$$y = \frac{14}{\sin 70^\circ} = 14.898...$$



$$\tan C = \frac{14.898...}{5.095...}$$

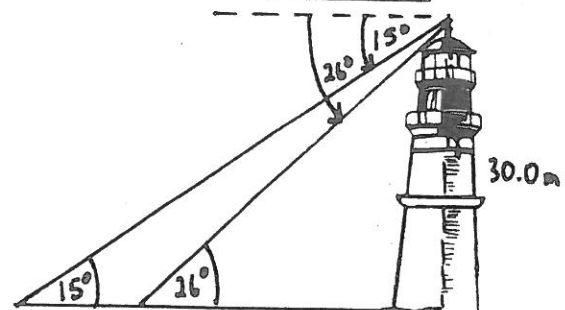
$$\angle ACK = 71.1...^\circ \approx 71^\circ$$



(Record your answer in the numerical response box from left to right)

7	1		
---	---	--	--

13. From a lighthouse window 30.0 m above sea level, the angles of depression of two buoys which are in a direct line from the lighthouse are 15° and 26° respectively. To the nearest tenth of a metre, the distance between the buoys is _____.



A. 173.5 $\tan 15^\circ = \frac{30}{AC}$ $\tan 26^\circ = \frac{30}{BC}$

B. 165.5

☒ C. 50.5

D. 24.4

$$AC = \frac{30}{\tan 15^\circ}$$

$$BC = \frac{30}{\tan 26^\circ}$$

$$= 111.96...$$

$$= 61.50...$$

$$AC - BC = 111.96... - 61.50...$$

$$= 50.46...$$

Multiple Choice

14. From the diagram, the length of CD is

- (A) $c \sin x^\circ + d \cos x^\circ$
 (B) $c \cos x^\circ + d \sin x^\circ$
 (C) $(c + d) \cos x^\circ$
 (D) $(c + d) \sin x^\circ$

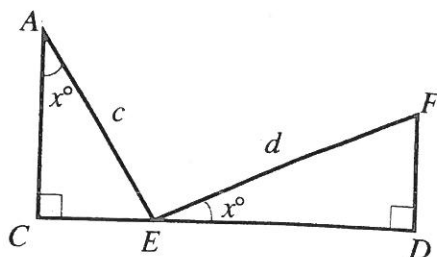
$$\sin x^\circ = \frac{CE}{c}$$

$$CE = c \sin x^\circ$$

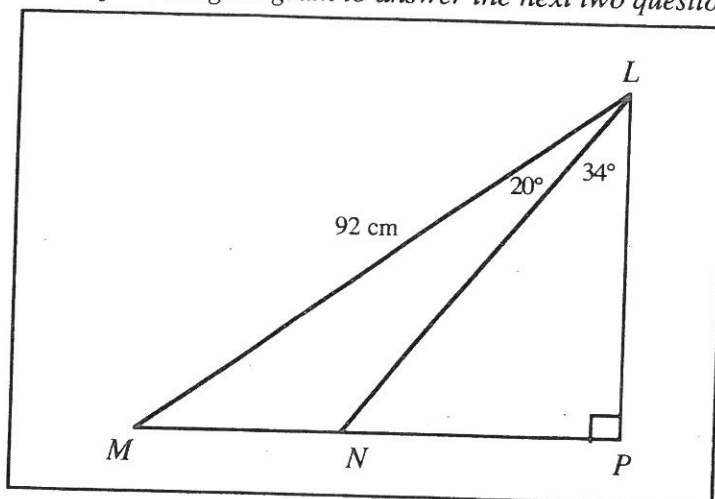
$$\cos x^\circ = \frac{ED}{d}$$

$$ED = d \cos x^\circ$$

$$\begin{aligned} CD &= CE + ED \\ &= c \sin x^\circ + d \cos x^\circ \end{aligned}$$



Use the following diagram to answer the next two questions.

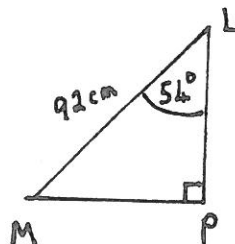


15. The length of LP , to the nearest centimetre, is

- A. 51 cm
 (B) 54 cm
 C. 74 cm
 D. 76 cm

$$\cos 54^\circ = \frac{LP}{92}$$

$$\begin{aligned} LP &= 92 \cos 54^\circ \\ &= 54.07... \text{ cm} \end{aligned}$$



Numerical Response

16. The length of MN , to the nearest centimetre, is

(Record your answer in the numerical response box from left to right)

3	8		
---	---	--	--

$$\sin 54^\circ = \frac{MP}{92}$$

$$\begin{aligned} MP &= 92 \sin 54^\circ \\ &= 74.4... \end{aligned}$$

$$\tan 34^\circ = \frac{NP}{LP} = \frac{NP}{54.07...}$$

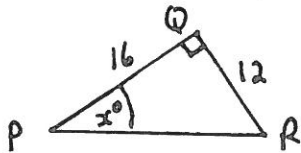
$$\begin{aligned} NP &= 54.07... \tan 34^\circ \\ &= 36.47... \end{aligned}$$

$$\begin{aligned} MN &= MP - NP \\ &= 74.4... - 36.47... \\ &= 37.95... = 38 \text{ cm} \end{aligned}$$

Written Response - 5 marks

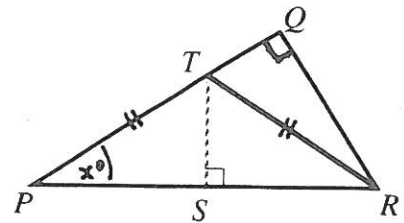
1. In the diagram $PQ = 16$ m, $QR = 12$ m, and $PT = TR$.

- Make a sketch of triangle PQR only and determine the exact length of PR .



$$PR^2 = 16^2 + 12^2 = 400$$

$$PR = \sqrt{400} = \underline{\underline{20 \text{ m}}}$$



- Explain why you cannot use only triangle QRT to determine the measure of $\angle QRT$.

In $\triangle QRT$, only two pieces of information are given $\rightarrow \angle TQR$ and side QR . This is not enough information to calculate $\angle QRT$.

- Calculate the measure of $\angle QPR$ and use it to determine the measure of $\angle QRT$ to the nearest degree.

$$\tan x^\circ = \frac{12}{16}$$

$$x^\circ = 36.86\dots^\circ$$

$PT = TR$ so $\triangle PTR$ is isosceles.

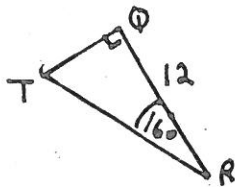
$$\angle TRP = \angle TPR = 37^\circ$$

$$\underline{\underline{\angle QPR = 37^\circ}}$$

$$\begin{aligned} \angle QRP &= 180^\circ - 90^\circ - 37^\circ \\ &= 53^\circ \end{aligned}$$

$$\begin{aligned} \angle QRT &= \angle QRP - \angle TRP \\ &= 53^\circ - 37^\circ \\ &= \underline{\underline{16^\circ}} \end{aligned}$$

- Calculate the length of PT to the nearest tenth of a metre.



$$\cos 16^\circ = \frac{12}{TR}$$

$$\begin{aligned} TR &= \frac{12}{\cos 16^\circ} \\ &= 12.5 \text{ m} \end{aligned}$$

$$PT = TR = \underline{\underline{12.5 \text{ m}}}$$

Answer Key

1. B 2. C 3. C 4. A 5. B 6. D 7. D 8. A
9. A 10. A 11. B 12. A 13. C 14. A 15. B

1.

0		5	
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2.

3	6	2	
---	---	---	--

3.

2	3		
---	---	--	--

4.

7	1		
---	---	--	--

5.

3	8		
---	---	--	--

Written Response

1. • 20 m
• In triangle QRT , only two pieces of information are given, $\angle TQR$ and side QR . This is not enough information to calculate $\angle QRT$.
• $\angle QPR = 37^\circ$, $\angle QRT = 16^\circ$.
• 12.5 metres.