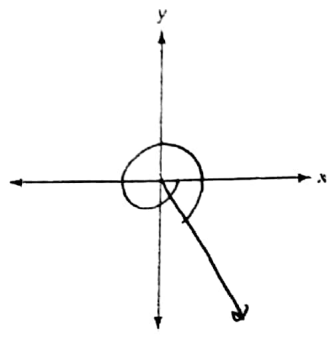


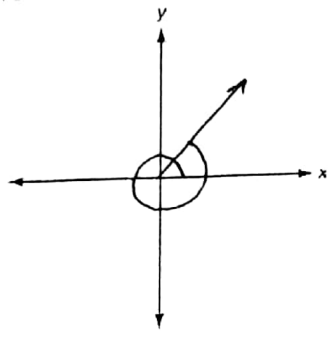
LESSON 10-2 Practice B
Angles of Rotation

Draw an angle with the given measure in standard position.

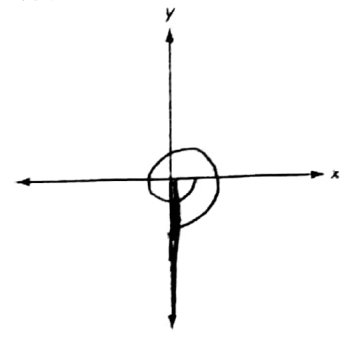
1. -420°



2. 405°



3. -450°



Find the measures of a positive angle and a negative angle that are coterminal with each given angle.

4. $\theta = 425^\circ$

$65^\circ, -295^\circ$

5. $\theta = -316^\circ$

$44^\circ, 676^\circ$

6. $\theta = -800^\circ$

$280^\circ, -80^\circ$

7. $\theta = 281^\circ$

$641^\circ, -79^\circ$

8. $\theta = -4^\circ$

$356^\circ, -364^\circ$

9. $\theta = 743^\circ$

$23^\circ, -337^\circ$

Find the measure of the reference angle for each given angle.

10. $\theta = 211^\circ$

31°

11. $\theta = -755^\circ$

35°

12. $\theta = -555^\circ$

15°

13. $\theta = 119^\circ$

61°

14. $\theta = -160^\circ$

20°

15. $\theta = 235^\circ$

55°

P is a point on the terminal side of θ in standard position. Find the exact value of the six trigonometric functions for θ .

16. $P(-5, 5)$

$\sin\theta = \frac{\sqrt{2}}{2}, \cos\theta = -\frac{\sqrt{2}}{2}$
 $\tan\theta = -1, \cot\theta = -1$
 $\csc\theta = \sqrt{2}, \sec\theta = -\sqrt{2}$

17. $P(2, 9)$

$\sin\theta = \frac{9\sqrt{85}}{85}, \cos\theta = \frac{2\sqrt{85}}{85}$
 $\tan\theta = \frac{9}{2}, \cot\theta = \frac{2}{9}$
 $\csc\theta = \frac{\sqrt{85}}{9}, \sec\theta = \frac{\sqrt{85}}{2}$

18. $P(-7, -5)$

$\sin\theta = -\frac{5\sqrt{74}}{74}, \cos\theta = -\frac{7\sqrt{74}}{74}$
 $\tan\theta = \frac{5}{7}, \cot\theta = \frac{7}{5}$
 $\csc\theta = -\frac{\sqrt{74}}{5}, \sec\theta = -\frac{\sqrt{74}}{7}$

Solve.

19. A circus performer trots her pony into the ring. The pony circles the ring 22 times as the performer flips and turns on the pony's back. At the end of the act, the pony exits on the side of the ring opposite its point of entry. Through how many degrees does the pony trot during the entire act?

8100

LESSON
10-3

Practice B
The Unit Circle

Convert each measure from degrees to radians or from radians to degrees.

1. $\frac{5\pi}{12}$

75°

2. 215°

$\frac{43\pi}{36}$

3. $-\frac{29\pi}{18}$

-290°

4. -180°

$-\pi$

5. $\frac{5\pi}{3}$

300°

6. $-\frac{7\pi}{6}$

210°

7. 400°

$\frac{20\pi}{9}$

8. $\frac{3\pi}{10}$

54°

9. 35°

$\frac{7\pi}{36}$

Use the unit circle to find the exact value of each trigonometric function.

10. $\cos \frac{2\pi}{3}$

$-\frac{1}{2}$

11. $\tan \frac{5\pi}{4}$

1

12. $\tan \frac{5\pi}{6}$

$-\frac{\sqrt{3}}{3}$

13. $\sin 315^\circ$

$-\frac{\sqrt{2}}{2}$

14. $\cos 225^\circ$

$-\frac{\sqrt{2}}{2}$

15. $\tan 60^\circ$

$\sqrt{3}$

Use a reference angle to find the exact value of the sine, cosine, and tangent of each angle.

16. 150°

$\frac{1}{2}; -\frac{\sqrt{2}}{2}; -\frac{\sqrt{3}}{3}$

17. -225°

$\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; -1$

18. -300°

$\frac{\sqrt{3}}{2}; \frac{1}{2}; \sqrt{3}$

19. $\frac{11\pi}{6}$

$-\frac{1}{2}; \frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

20. $-\frac{2\pi}{3}$

$-\frac{\sqrt{3}}{2}; -\frac{1}{2}; \sqrt{3}$

21. $\frac{5\pi}{4}$

$-\frac{\sqrt{2}}{2}; \frac{\sqrt{2}}{2}; 1$

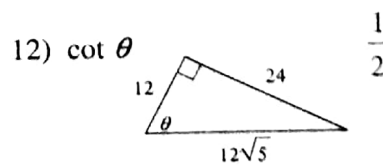
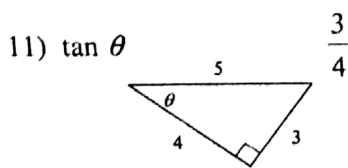
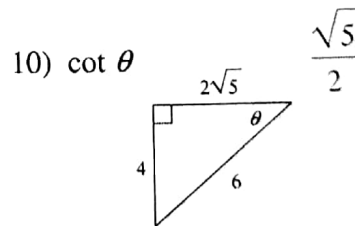
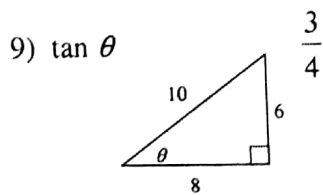
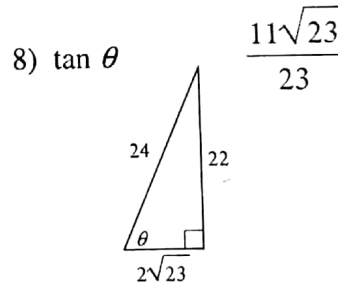
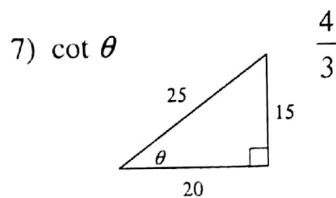
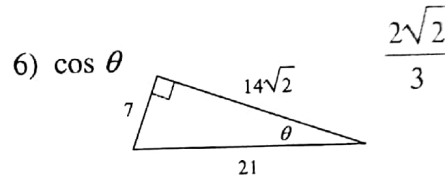
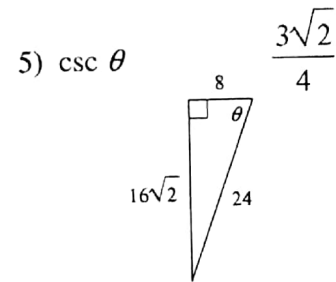
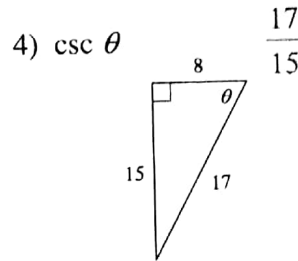
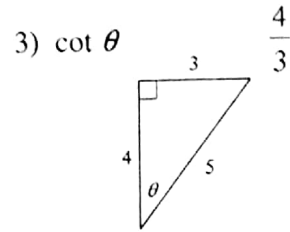
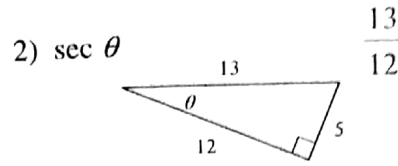
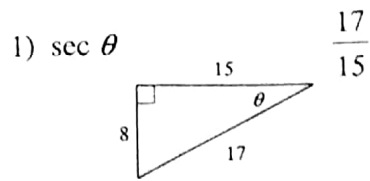
Solve.

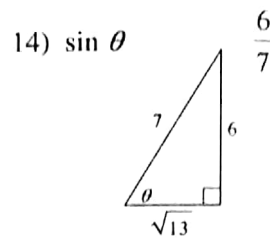
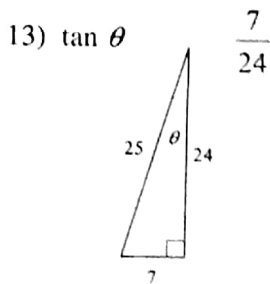
22. San Antonio, Texas, is located about 30° north of the equator. If Earth's radius is about 3959 miles, approximately how many miles is San Antonio from the equator?

2073 mi

Right Triangle Trig. - Evaluating Trig. Ratios

Find the value of the trig function indicated.





Find the value of each. Round your answers to the nearest ten-thousandth.

15) $\cos 10^\circ$
0.9848

16) $\sin 60^\circ$
0.8660

17) $\csc 21^\circ$
2.7904

18) $\cos 60^\circ$
0.5000

19) $\tan 40^\circ$
0.8391

20) $\csc 59^\circ$
1.1666

21) $\csc 56^\circ$
1.2062

22) $\cot 65^\circ$
0.4663

23) $\tan 10^\circ$
0.1763

24) $\tan 25^\circ$
0.4663

Find the value of the trig function indicated.

25) Find $\csc \theta$ if $\tan \theta = \frac{3}{4} \frac{5}{3}$

26) Find $\cot \theta$ if $\sec \theta = 2 \frac{\sqrt{3}}{3}$

27) Find $\tan \theta$ if $\sin \theta = \frac{4}{5} \frac{4}{3}$

28) Find $\cot \theta$ if $\sec \theta = \frac{5}{4} \frac{4}{3}$

29) Find $\sec \theta$ if $\sin \theta = \frac{3\sqrt{13}}{13} \frac{\sqrt{13}}{2}$

30) Find $\cot \theta$ if $\sin \theta = \frac{12}{13} \frac{5}{12}$

Critical think questions:

31) Draw a right triangle that has an angle with a tangent of 1.

Any right isosceles triangle.

32) What is the slope of the hypotenuse for #9? How does that compare to $\tan \theta$? Why?

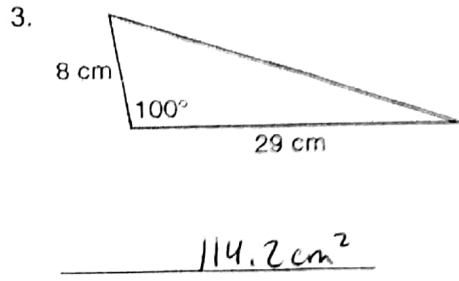
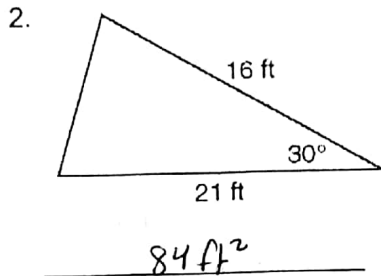
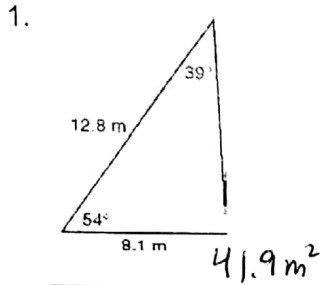
$\frac{3}{4}$ It's the same as $\tan \theta$ since rise/run = opp/adj

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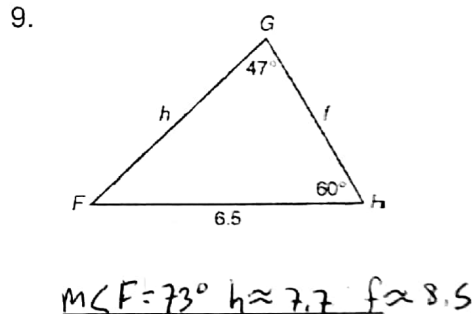
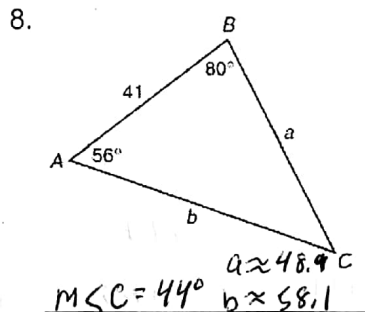
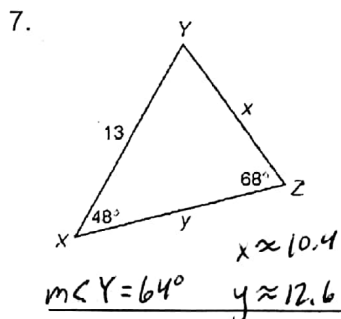
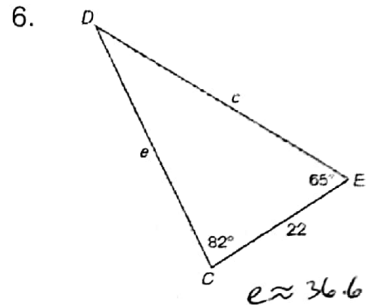
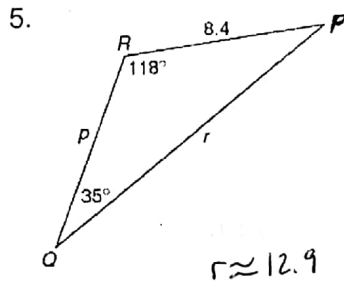
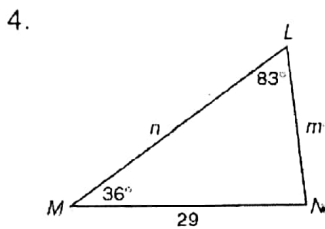
LESSON
10-5

Practice B
The Law of Sines

Find the area of each triangle. Round to the nearest tenth.



Solve each triangle. Round to the nearest tenth.



An artist is designing triangular mosaic tiles. Determine the number of triangles he can form from the given side and angle measures. Then solve the triangles. Round to the nearest tenth.

10. $a = 8 \text{ cm}$, $b = 10 \text{ cm}$,
 $A = 60^\circ$

0 Triangles

11. $a = 18 \text{ cm}$, $b = 15 \text{ cm}$,
 $A = 85^\circ$ $C \approx 10.3 \text{ cm}$
 $m \angle B = 36^\circ$

1 triangle $m \angle C = 24^\circ$

12. $a = 22 \text{ cm}$, $b = 15 \text{ cm}$,
 $A = 120^\circ$ $C \approx 11.3$
 $m \angle B = 56^\circ$

1 Triangle $m \angle C = 39^\circ$

Solve.

13. Ann is creating a triangular frame. Two angles and the included side of the frame measure 64° , 58° , and 38 centimeters, respectively. What are the lengths of the other two sides of the frame to the nearest tenth of a centimeter?

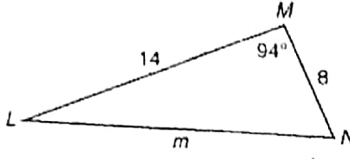
38.0 cm; 40.3 cm

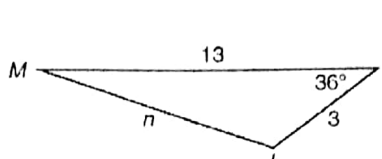
↑ Swap Answers ↑

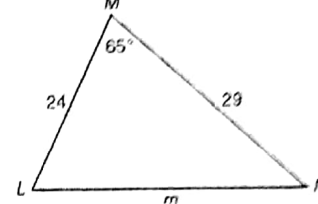
LESSON
10-6

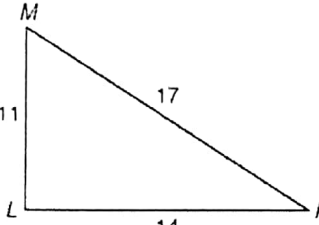
Practice B
The Law of Cosines

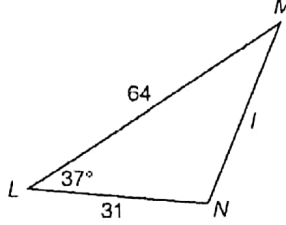
Use the given measurements to solve each triangle. Round to the nearest tenth.

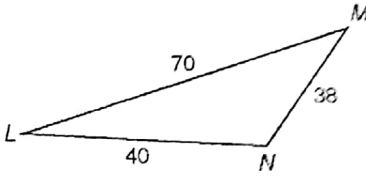
1. 
 $m \angle N \approx 57.3^\circ$
 $m \approx 16.6$ $m \angle L \approx 28.7^\circ$

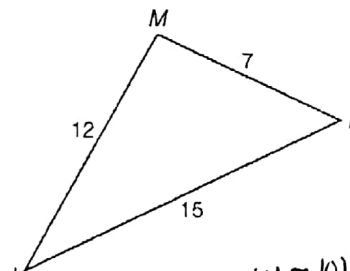
2. 
 $m \angle L \approx 134.5^\circ$
 $m \angle M \approx 9.5^\circ$
 $n \approx 10.7$

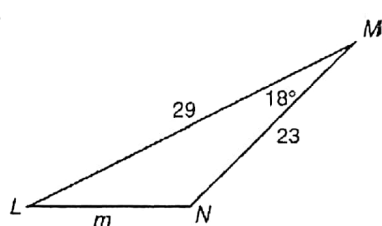
3. 
 $m \approx 28.7$ $m \angle L \approx 65.9$ $m \angle N \approx 49.1$

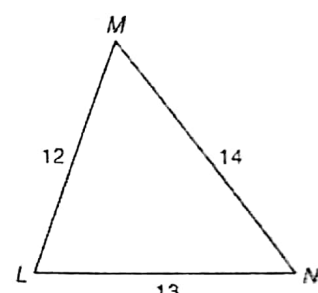
4. 
 $m \angle N \approx 40.1$
 $m \angle L \approx 84.8$ $m \angle M \approx 55.1$

5. 
 $m \angle 117.6$
 $l \approx 43.5$ $m \angle M \approx 25.4$

6. 
 $m \angle N \approx 127.6$
 $m \angle L \approx 25.5$ $m \angle M \approx 26.9$

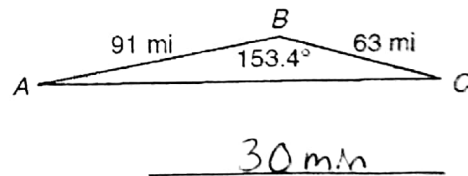
7. 
 $m \angle M \approx 101$
 $m \angle L \approx 27.2$ $m \angle N \approx 51.8$

8. 
 $m \angle L \approx 44.7$
 $m \approx 10.1$ $m \angle N \approx 117.3$

9. 
 $m \angle N \approx 52.6$
 $m \angle L \approx 68$ $m \angle M \approx 59.4$

Solve.

10. A postal airplane leaves Island A and flies 91 miles to Island B. It drops off and picks up mail and flies 63 miles to Island C. After unloading and loading mail, the plane returns to Island A at an average rate of 300 miles per hour. How long does it take the pilot to travel from Island C to Island A?

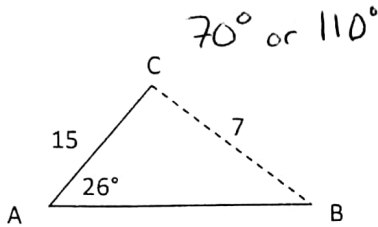


11. A statue is erected on a triangular marble base. The lengths of the sides of the triangle are 12 feet, 16 feet, and 18 feet. What is the area of the region at the base of the statue?

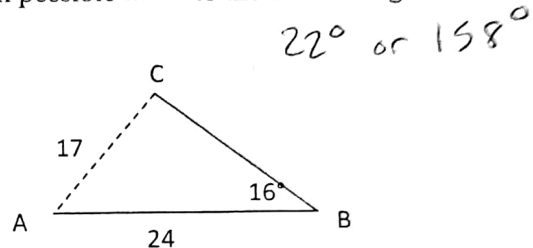
91.1 ft²

II. Practice Problems

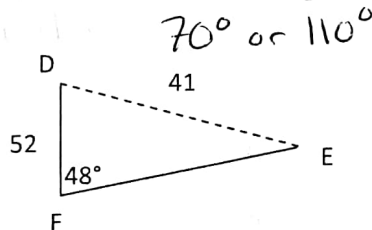
1. For $\triangle ABC$,
 $a = 7, b = 15$, and $m\angle A = 26^\circ$. Find all possible $m\angle B$ to the nearest degree.



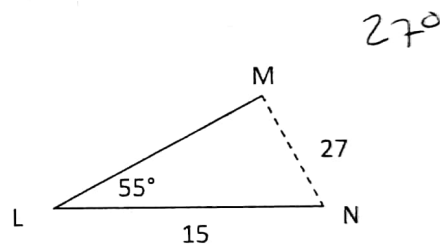
2. For $\triangle ABC$,
 $b = 17, c = 24$, and $m\angle B = 16^\circ$. Find all possible $m\angle C$ to the nearest degree.



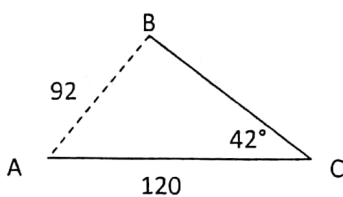
3. For $\triangle DEF$,
 $e = 52, f = 41$, and $m\angle F = 48^\circ$. Find all possible $m\angle E$ to the nearest degree.



4. For $\triangle LMN$,
 $l = 27, m = 15$, and $m\angle L = 55^\circ$. Find all possible $m\angle M$ to the nearest degree.

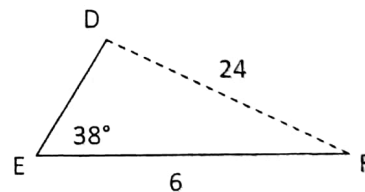


5. For $\triangle ABC$,
 $b = 120, c = 92$, and $m\angle C = 42^\circ$. How many triangles can be formed?



Two triangles
 $m\angle B \approx 61^\circ$ or 119°

6. For $\triangle DEF$,
 $d = 6, e = 24$, and $m\angle E = 38^\circ$. How many Triangles can be formed?



One triangle
 $m\angle D \approx 9^\circ$

III. Practice (harder) & word problems

7. For $\triangle ABC$,
 $a = 62, b = 53$, and $m\angle A = 54^\circ$. Find all possible $m\angle A$ to the nearest degree.
 71° or 109°
8. For $\triangle LMN$,
 $m = 8, n = 11$, and $m\angle M = 6^\circ$. Find all possible $m\angle N$ to the nearest degree.
 8° or 172°
9. For $\triangle XYZ$, $y = 7, z = 5$, and $m\angle Y = 19^\circ$. Find all possible $m\angle Z$ to the nearest degree.
 13°
10. For $\triangle ABC$,
 $a = 40, c = 49$, and $m\angle C = 32^\circ$. Find all possible $m\angle A$ to the nearest degree.
 26°
11. For $\triangle DEF$,
 $e = 12, f = 21$, and $m\angle E = 25^\circ$. Find all possible $m\angle F$ to the nearest degree.
 48° or 132°
12. For $\triangle LMN$,
 $l = 30, m = 24$, and $m\angle M = 40^\circ$. Find all possible $m\angle L$ to the nearest degree.
 53° or 127°
13. A triangle has two sides with lengths of 20 and 15. The measure of the angle opposite the side with a length of 15 is 35° . Find all the possible measures of the angle opposite the side with a length of 20 to the nearest degree.
 50° or 130°
14. A triangle has two sides with lengths of 45 and 44. The measure of the angle opposite the side with a length of 44 is 62° . Find all the possible measures of the angle opposite the side with a length of 45 to the nearest degree.
 65° or 115°
15. A triangle has two sides with lengths of 63 and 75. The measure of the angle opposite the side with a length of 75 is 22° . Find all the possible measures of the angle opposite the side with a length of 63 to the nearest degree.
 18°
16. A triangle has two sides with lengths of 42 and 37. The measure of the angle opposite the latter is 20° . Find all the possible measures of the angle opposite the side with a length of 42 to the nearest degree.
 23° or 157°
17. A triangle has two sides with lengths of 15 and 9. The measure of the angle opposite the latter is 34° . How many triangles can be formed?
Two triangles
 $\approx 69^\circ$ or 111°
18. A triangle has two sides with lengths of 17 and 19. The measure of the angle opposite the latter is 5° . How many triangles can be formed?
one triangle $\approx 4^\circ$