Chapter 5 Homework - Basic Math
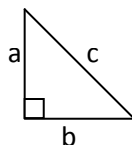
Formulas

Pythagorean's Theorem

Find the length of the missing side of a triangle

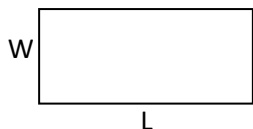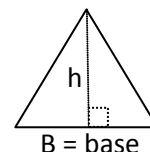$$a^2 + b^2 = c^2 \quad \text{or} \quad c = \sqrt{a^2 + b^2}$$

Perimeter = A + B + C

> Note: Sometimes height is referred to as altitude.
> Triangle Area = ½ base x altitude

Find the area

A = Length x Width
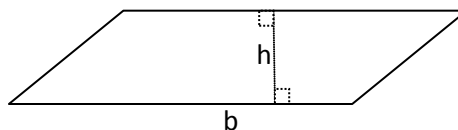
A = ½ base x height

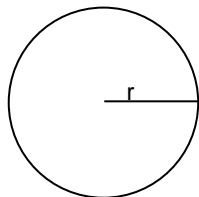Area of a parallelogram = base x height

Area of a trapezoid = $\dfrac{(A+B)}{2}$ h
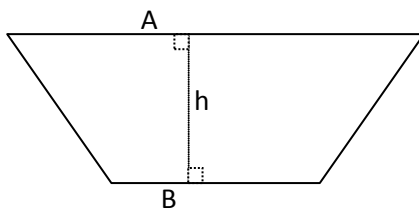
Area of a circle = πr^2

Area of a sector of a circle = $(\dfrac{\Delta}{360})(\pi r^2)$
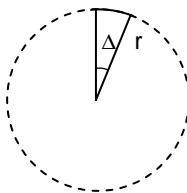
Convert Square feet to Acres

acres = sqft ÷ 43560   or $acres = \frac{sqft}{43560}$

Converting degrees, minutes and seconds to decimal degrees and back.

If you have a calculator which will perform these conversions directly you may use it. If not, convert degrees, minutes and seconds to decimal degrees as follows:

Degrees, Minutes and Seconds Conversion		Conversion Example 27°37'14"		Example Converted to Decimal Equivalent	
Degrees	=	27°	=	27°	Deg
$\frac{Minutes}{60}$	=	$\frac{37}{60}$	=	0.61667	Deg
$\frac{Seconds}{3600}$	=	$\frac{14}{3600}$	=	0.00389	Deg
Add Above Amounts			Total	27.62056	Deg
27.62056 Degrees is the decimal equivalent of 27°37'14"					

To convert decimal degrees back to degrees, minutes and seconds use the following steps:
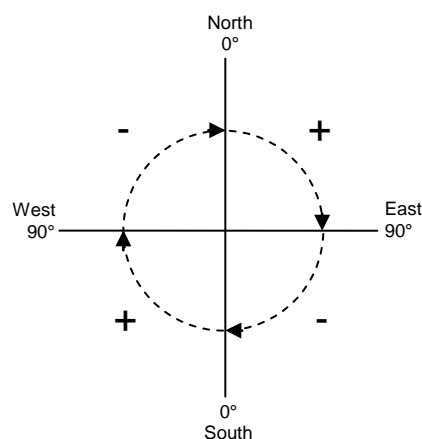
1. For the angle expressed in decimal degrees, 48.25667°, take that portion of the number to the left of the decimal *48.* that will be the degrees (48°).

2. Take that portion of the number in the example which lies to the right of the decimal and multiply it by 60. *0.25667 x 60 = 15.40002* The portion of the number to the left of the decimal is the minutes (15').

3. Take the remaining portion of the product from step 2 which lies to the right of the decimal and multiply it by 60. *0.40002 x 60 = 24.0001* Round off, the portion of the product to the left of the decimal is the seconds (24").

    The example decimal degrees, 48.25667° converts to 48°15'24"

The diagram below shows each quadrant to help determine if you need to add or subtract the rotation angle.
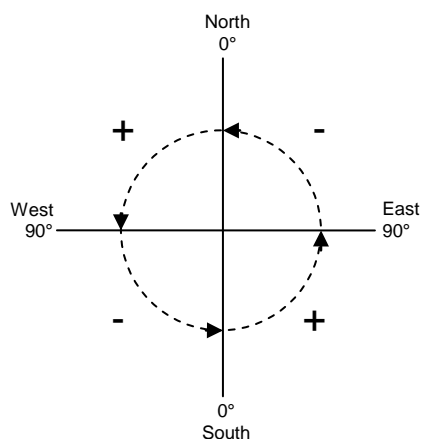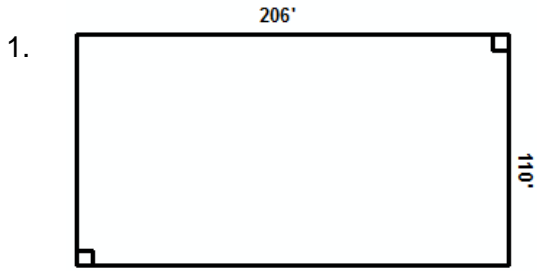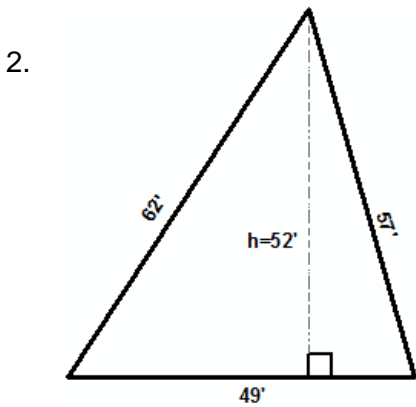

Rotating Counter Clockwise
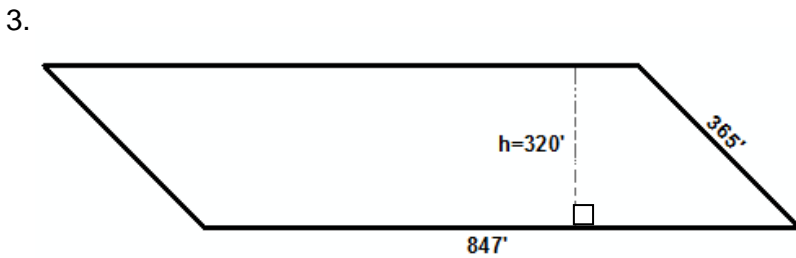

Rotating Clockwise

Find the Area
Show your work.
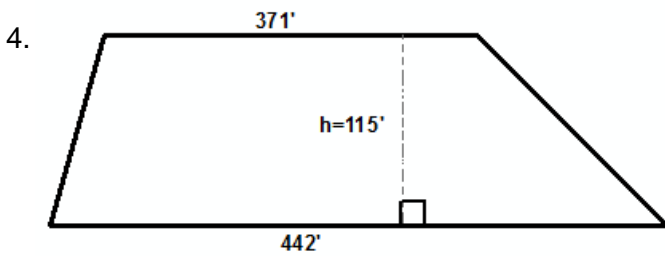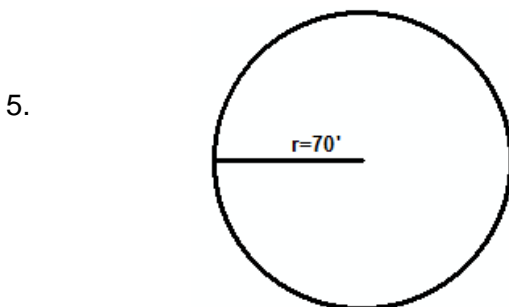
1.

206'

110'

A= _____ Sq Ft

A= _____ Acres

2.

62'

57'

h=52'

49'

A= _____ Sq Ft

A= _____ Acres

3.

365'

h=320'

847'

A= _____ Sq Ft

A= _____ Acres

4.

371'

h=115'

442'

A= _____ Sq Ft

A= _____ Acres

5.

r=70'

A= _____ Sq Ft

A= _____ Acres

Find the Areas of the following
Show your work

6.

276'

100'

A= _____ Sq Ft

A= _____ Acres

7.

510'

286'

h=264'

286'

510'

A= _____ Sq Ft

A= _____ Acres

8.

268'

120'

131'

284'

A= _____ Sq Ft

A= _____ Acres

9.

r=660'

A= _____ Sq Ft

A= _____ Acres

10.

h=240'

360'

A= _____ Sq Ft

A= _____ Acres

Find the Areas of the following

Show your work

11.

2640'

330'

A= _____ Sq Ft

A= _____ Acres

12.

110'

63'

h=50'

63'

110'

A= _____ Sq Ft

A= _____ Acres

13.

710'

370'

1385'
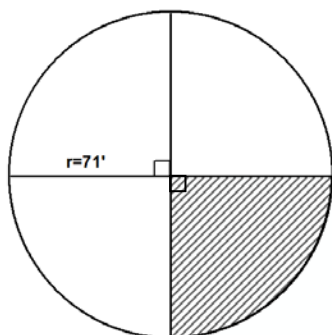
A= _____ Sq Ft

A= _____ Acres

14.

176'

167'

A= _____ Sq Ft

A= _____ Acres

15.

r=71'
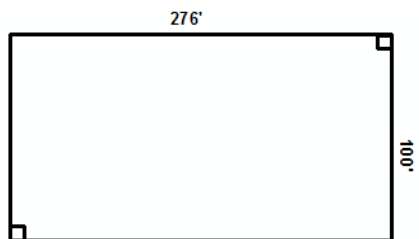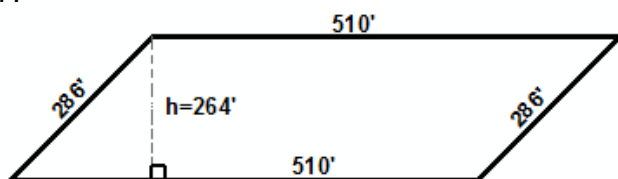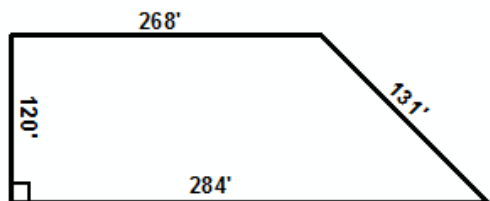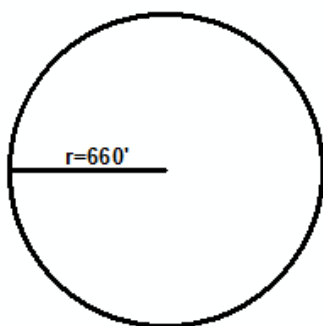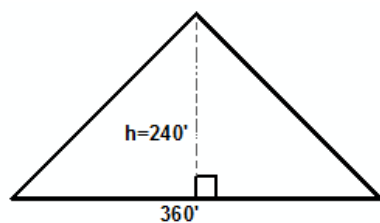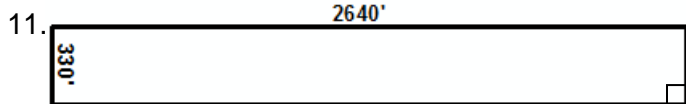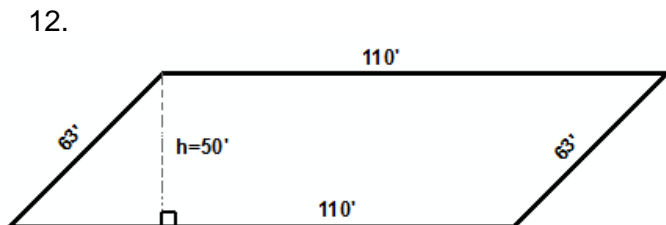
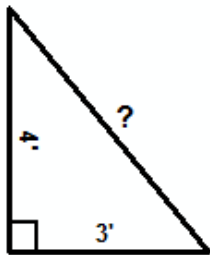Find the area of the shaded portion.

A= _____ Sq Ft
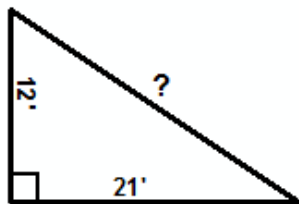
A= _____ Acres

Pythagorean's Theorem
Show your work

$$a^2 + b^2 = c^2 \quad \text{or} \quad c = \sqrt{a^2 + b^2}$$
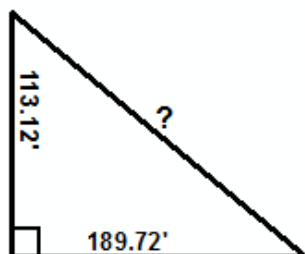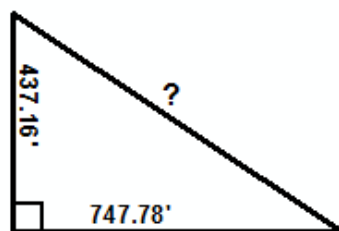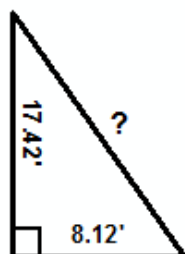
Find the length of the unknown side.

16.

4'   ?
3'

17.

12'   ?
21'

18.

113.12'   ?
189.72'

19.

437.16'   ?
747.78'

20.

17.42'   ?
8.12'

21. Mathematically rotate the bearing N 21°14'22" W counter clockwise 15°.

22. Mathematically rotate the bearing S 86°00'00" W clockwise 8°.

23. Mathematically rotate the bearing S 87°26'48" E counter clockwise 2°33'12".