Pre-Algebra Notes SOL 8.7 (10-5, 10-7) Area and Circumference   Mrs. Grieser
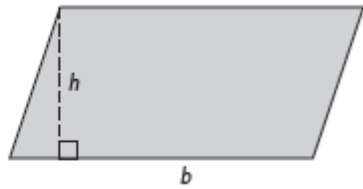
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Area of Parallelograms, Triangles, Trapezoids

- A parallelogram is a quadrilateral whose opposite side are parallel and congruent.
- A triangle is a three-sided polygon.
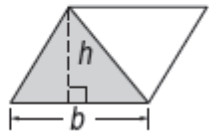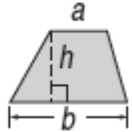- A trapezoid is a quadrilateral with exactly one pair of parallel sides.

Area of a Parallelogram: A = bh (Area = base x height)

| Area of a Parallelogram		
Words	The area *A* of a parallelogram in square units is $A = bh$, where *b* is the base of the parallelogram and *h* is the height.	**Model**
Symbols	$A = bh$	

Example: Find the area of the parallelograms…

a)

14 cm
32 cm

b)

10.2 ft
7.5 ft
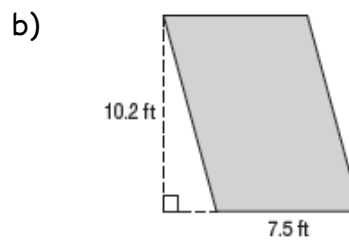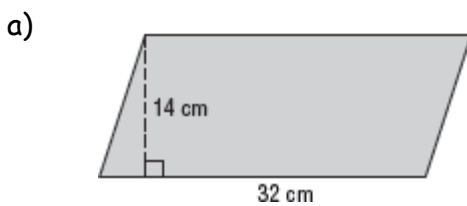
Area of Triangles (A = $\frac{1}{2}$ bh) and Trapezoids (A = $\frac{1}{2}$ h(a + b))
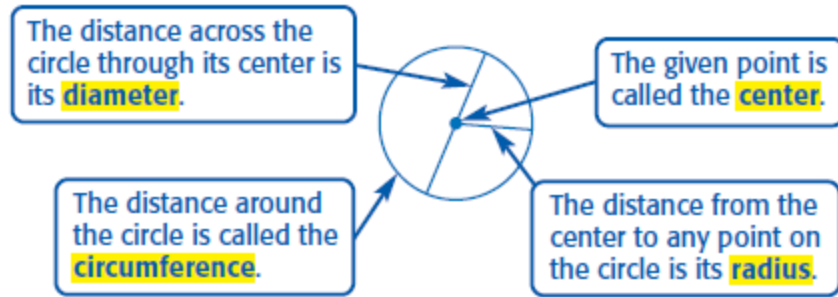
Shape	Words	Area Formula	Model
Triangle	A diagonal of a parallelogram separates the parallelogram into two congruent triangles. The area of each triangle is one-half the area of the parallelogram.	$A = \frac{1}{2}bh$	
Trapezoid	A trapezoid has two bases. The height of a trapezoid is the distance between the bases. A trapezoid can be separated into two triangles.	$A = \frac{1}{2}h(a + b)$	

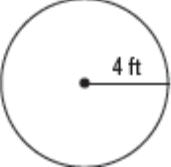*Example*: Find the area of the triangle and trapezoid…

a)

10 cm   7 cm
15 cm

b)

9 ft
7 ft
4 ft
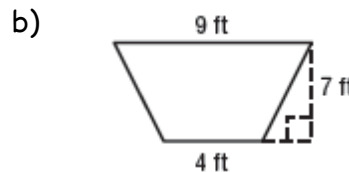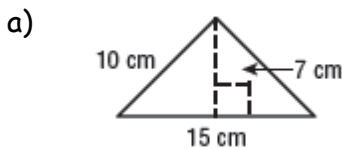
Circumference and Area of Circles

- A circle is the set of all points in a plane that are the same distance from a given point

The distance across the circle through its center is its **diameter**.

The given point is called the **center**.

The distance around the circle is called the **circumference**.

The distance from the center to any point on the circle is its **radius**.

> **Circumference of a circle:** $C = \pi d$ or $C = 2\pi r$
>
> **Area of a circle:** $A = \pi r^2$

Example: Find the circumference and area of the following circles, rounding to the nearest tenth...
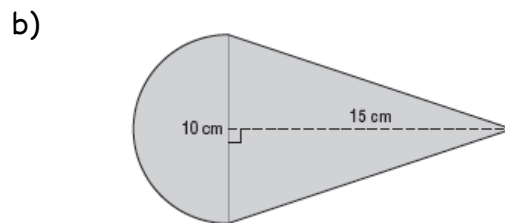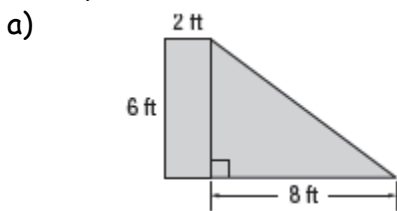
a)

4 ft

circumference _____

area_____

b) diameter = 6 cm

circumference _____

area _____

Area of Composite Figures

> To find the area of a composite figure, decompose the composite figure into figures with area you know how to find. Use the area formulas you have learned in this chapter.

Examples:

a)

2 ft

6 ft

8 ft

b)

10 cm   15 cm

You try: Find the areas. For circles, find both area and circumference...

a) triangle:
base = 4in, height = 10in

b) trapezoid:
height = 10 cm; bases 4 and 6cm

c) circle: diameter = 10ft

d) parallelogram:
base = 10 m; height = 4 m

e) parallegram: find height!
Area = 30 in², base = 6 in

f) triangle: find base!
Area = 60 ft²; height = 6ft