

# Level 1 Geometry

## 2008 Final Exam

NAME: \_\_\_\_\_

Circle Teacher:    Cordero    Doucette    Goldberg    Nitsch    Richardson

Circle block:    A    B    C    D    E    F    G    H

**INSTRUCTIONS: PLEASE SHOW ALL OF YOUR WORK! If work is not shown, then credit may not be given.** If you cannot fit your work in the space given, please use extra paper and remember to put your name on it. Neatness is expected. If I cannot read an answer, I cannot grade it and I will mark it incorrect. Numeric answers will be accepted in any correct form (either in simplified radical form or in terms of  $\pi$  or in decimal to **two places**.) Don't forget to include units in your answers. If you do not understand the phrasing of a question please ask. Good luck!

The last page is a formula sheet which you may detach for easier reference.

**Point values as marked (73 total possible points)**

Page	Score	Page	Score
2		7	
3		8	
4		9	
5		10	
6		11 & 12	
<b>Total:</b>			

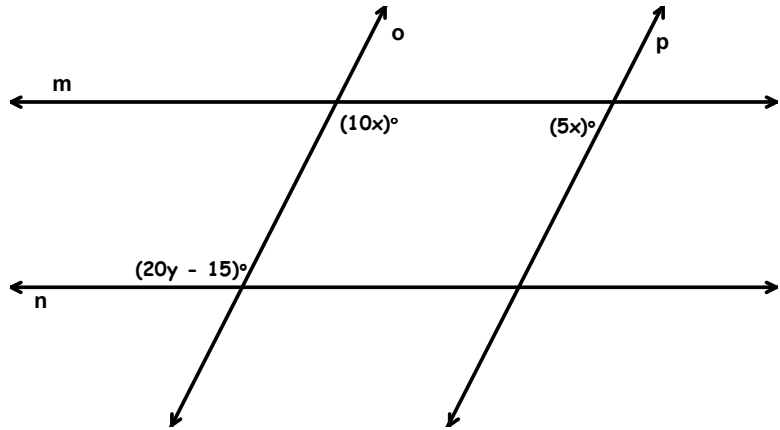
GRAND TOTAL: \_\_\_\_\_

1. (4 points) Use the diagram and the given information to find  $x$  and  $y$ .

Given:  $m \parallel n$  and  $o \parallel p$

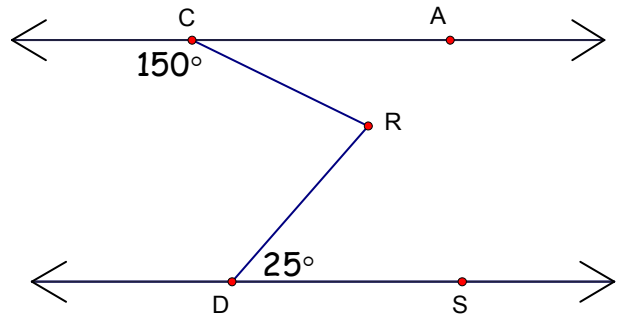
$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_



2. (3 points) In the diagram below,  $\overrightarrow{CA} \parallel \overrightarrow{DS}$  find the  $m\angle R$ .

$m\angle R =$  \_\_\_\_\_

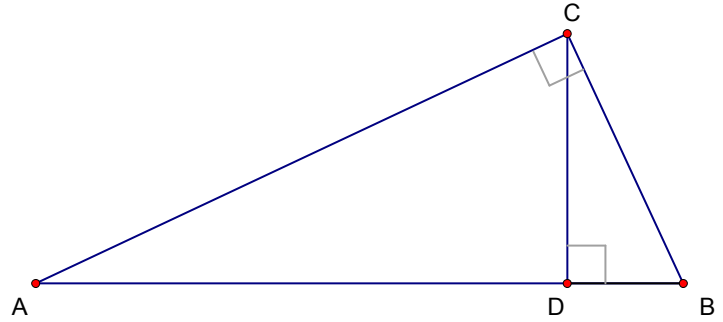


3. (3 points)  $\angle ACB$  and  $\angle CDB$  are right angles.

$CB = 8$  and  $DB = 5$

Find  $AD$ :

$AD =$  \_\_\_\_\_

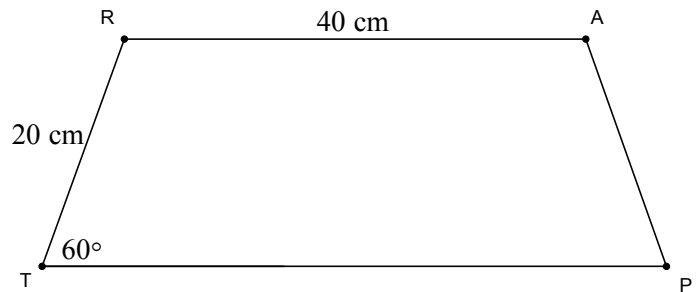


4. (4 points)

TRAP is an isosceles trapezoid.

Find the area of TRAP:

Area = \_\_\_\_\_

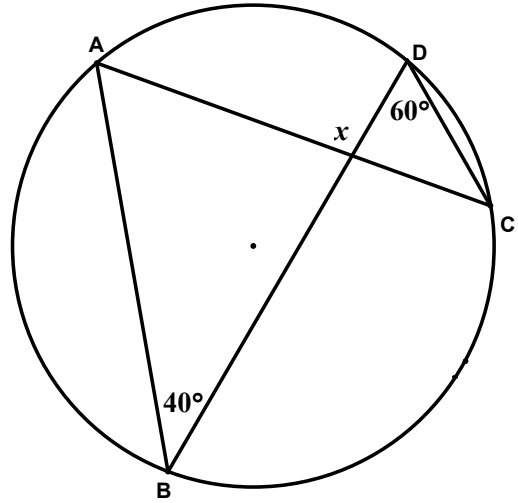


5. (3 points) In  $\odot C$ , the length of chord  $\overline{AB}$  is 8 inches. If the diameter of the circle is 10 inches, how far is the chord from the center of the circle?

Distance from center = \_\_\_\_\_

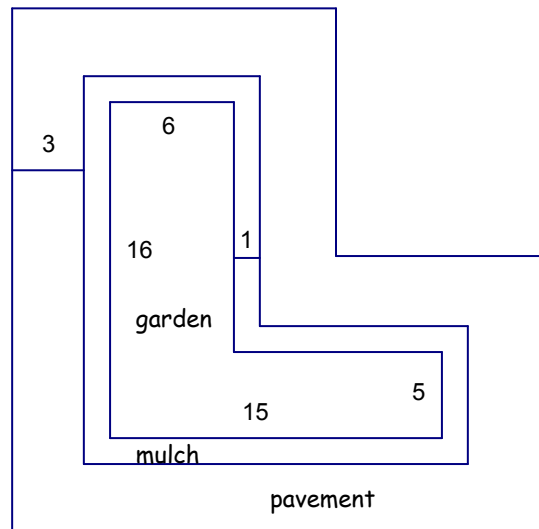
6. (3 points) Find the measure of the angle labeled  $x$ :

$x =$  \_\_\_\_\_



7. (3 points) A garden is shaped like an “L” as shown, and surrounded by 1 foot wide band of bark mulch and a 3 foot wide pavement. What is the area of the pavement?

Area of pavement = \_\_\_\_\_

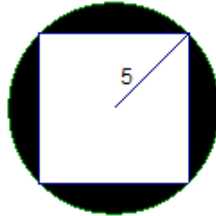


8. (3 points) Mary orders a large 16" (diameter) pizza from Murray's Pizza Parlor for \$8.50. When she arrived at the pizza parlor to pick up the pizza, she was informed that they had run out of 16" pizza pans and was offered two small 10" (diameter) pizzas for the same price. If Mary accepts this, is she agreeing to a good or a bad deal, in other words, is Mary getting the same amount of pizza for her money? Explain your reasoning. **(No credit given without an explanation.)**

Good or bad deal? (Explain below) \_\_\_\_\_

9. (3 points) In the figure a square is inscribed in a circle of radius of 5, find the area of the shaded region.

Area = \_\_\_\_\_



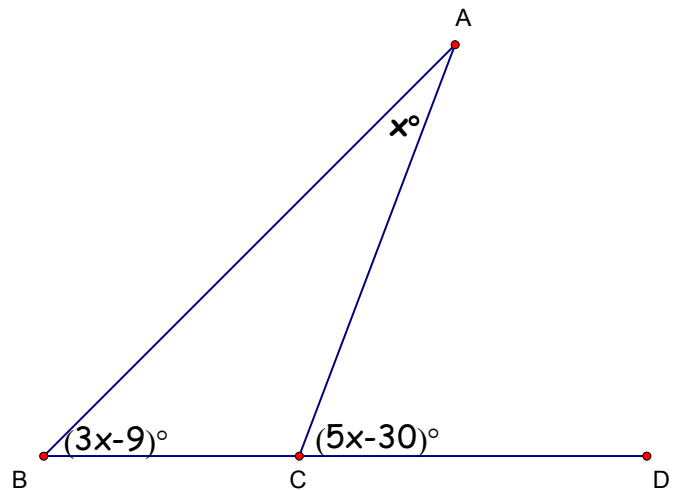
10. (3 points) Assume the following statement is true: "All children smile." **Circle** all valid conclusions.
- Jim smiles, so he is a child.
  - Sarah does not smile, so she is not a child.
  - Carol is a child, so she smiles.

11. (3 points) Three times the supplement of an angle equals seven times the complement. Find the measure of the angle.

Angle = \_\_\_\_\_

12. (3 points) Find the  $m\angle ACB$

$m\angle ACB =$  \_\_\_\_\_

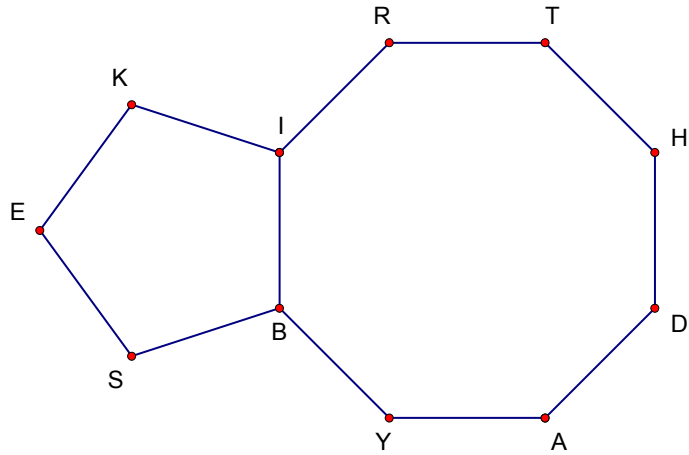


13. (4 points) A regular pentagon, a regular octagon, and  $\angle SBY$  meet at a point.

- Find the measure of  $\angle SBY$  \_\_\_\_\_
- Is there any regular polygon that can have an angle the same measure as  $\angle SBY$  ? Circle “yes” or “no” and explain your answer below **(no credit without an explanation)**.

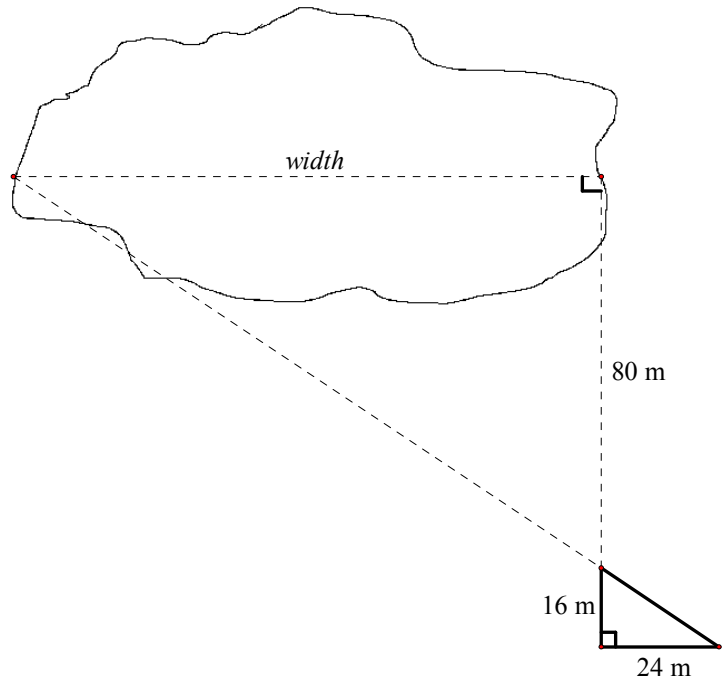
Yes / No

Explanation:



14. (3 points) A forest ranger needs to determine the width of a lake, so she sets up the triangles shown to determine the width indirectly. How wide is the lake?

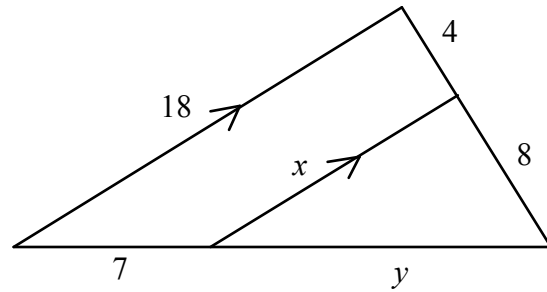
width = \_\_\_\_\_



15. (4 points) Find the values of  $x$  and  $y$ .

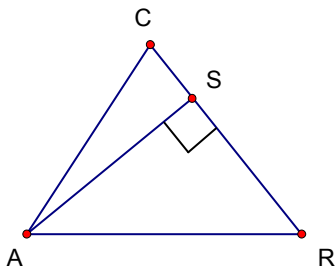
$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

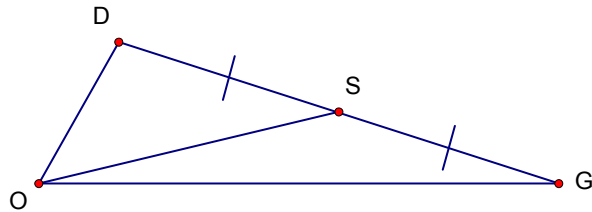


16. (4 points) Match each term with the picture that depicts the term. (Write one of A, B, C, D, E on the line under each diagram)

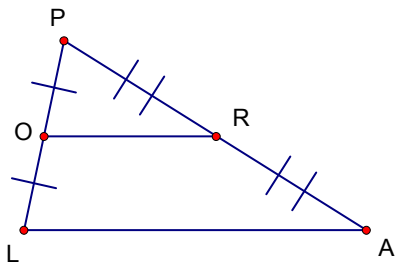
- A) Median B) Midsegment (Midline) C) Angle Bisector D) Altitude E) Perpendicular bisector



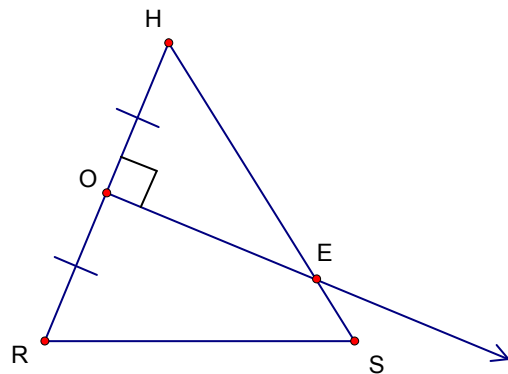
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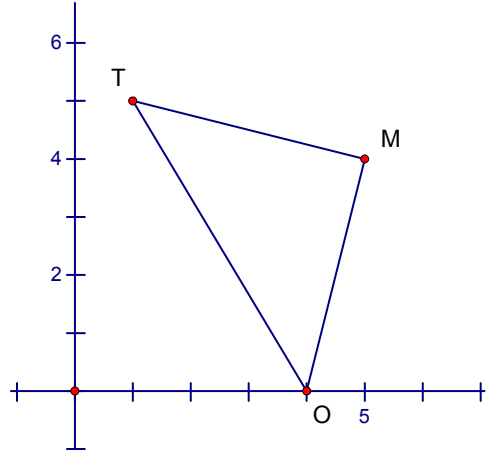
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\_\_\_\_\_

17. (3 points) The vertices of triangle TOM have coordinates  $T = (1, 5)$ ,  $O = (4, 0)$ ,  $M = (5, 4)$ .

Find the length of the median from M to  $\overline{OT}$ . \_\_\_\_\_

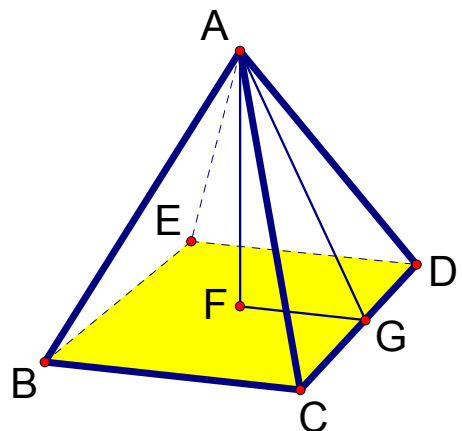


18. (3 points) Jimmy is in Fenway Park in a Green Monster seat 50 feet above the field. He can see home plate at an angle of depression of  $10^\circ$  (looking down from the horizontal). What is the distance from Jimmy to home plate?

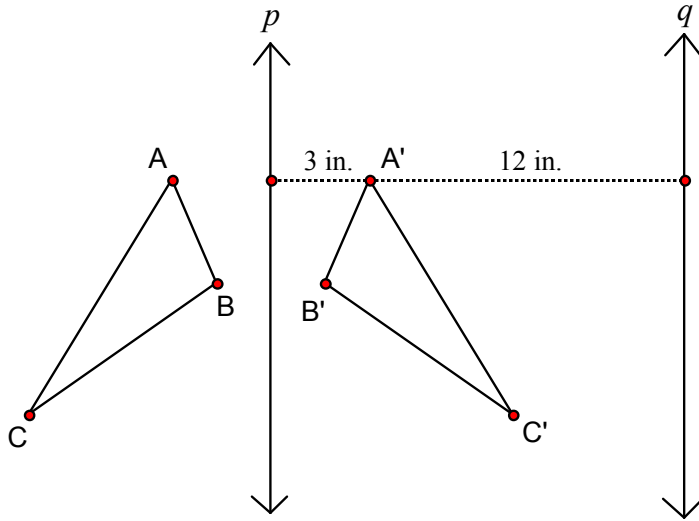
distance: \_\_\_\_\_

19. (3 points) If the length of side  $\overline{BC}$  of base BCDE of a right square pyramid is 6 cm. and the length of the lateral edge  $\overline{AC}$  is 8 cm., find the volume of the pyramid.

Volume = \_\_\_\_\_



20. (3 points) In the diagram below,  $p \parallel q$  and  $\triangle ABC$  is reflected over line  $p$  to  $\triangle A'B'C'$ .



a. Make a rough sketch of  $\triangle A''B''C''$ , the reflection of  $\triangle A'B'C'$  over line  $q$ . (Don't forget to label the new triangle)

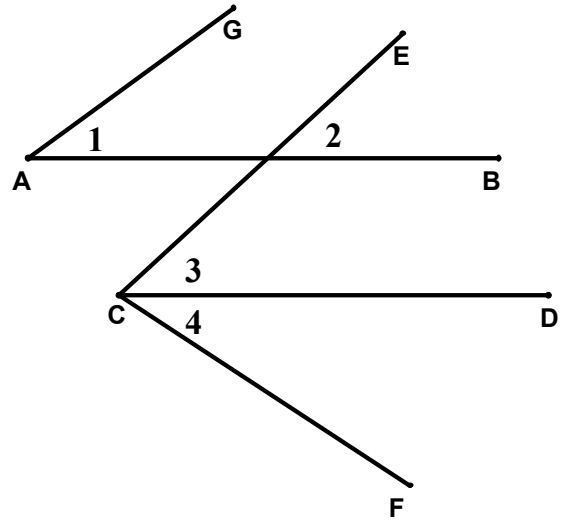
b. What is the distance from  $A$  to  $A''$ ?  
Distance: \_\_\_\_\_

c. What single transformation maps  $\triangle ABC$  to  $\triangle A''B''C''$ ?  
Transformation: \_\_\_\_\_

**Choose 2 of the following 4 proofs.**

21. (4 points) Given:  $\overline{AG} \parallel \overline{CE}$ ;  $\overline{AB} \parallel \overline{CD}$ ;  $\angle 1 \cong \angle 4$

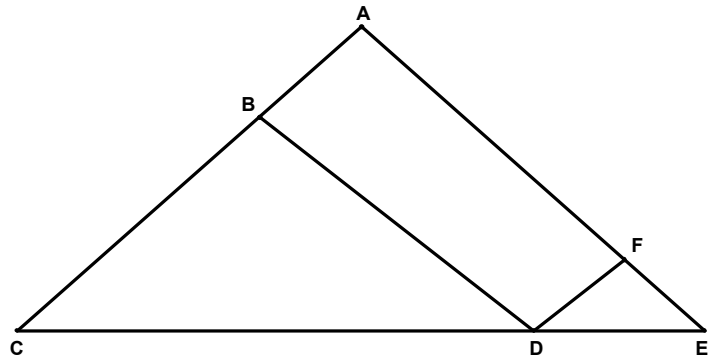
Prove:  $\overline{CD}$  bisects  $\angle ECF$ .



22. (4 points) Given:  $\overline{AC} \cong \overline{AE}$

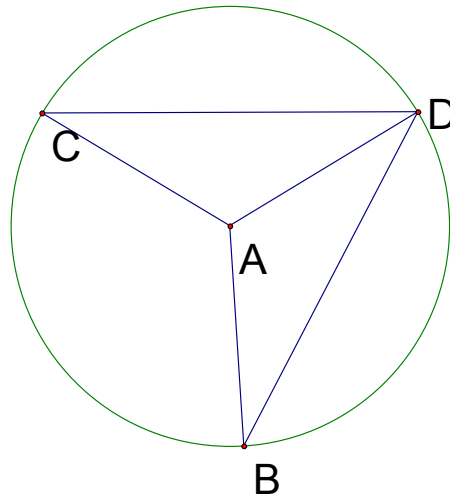
$\angle CBD \cong \angle EFD$

Prove:  $\frac{BC}{FE} = \frac{CD}{ED}$



23. (4 points) Given:  $\odot A$ , and  $\overline{CD} \cong \overline{BD}$

Prove:  $\angle B \cong \angle C$



24. (4 points) Given:

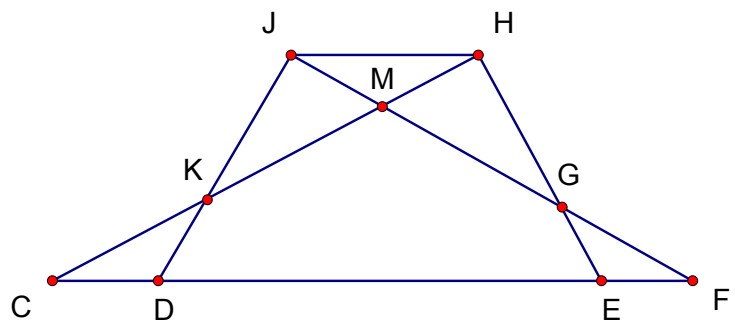
$$\overline{CD} \cong \overline{EF}$$

$$\overline{JF} \perp \overline{JD}$$

$$\overline{CH} \perp \overline{HE}$$

$$\overline{CH} \cong \overline{JF}$$

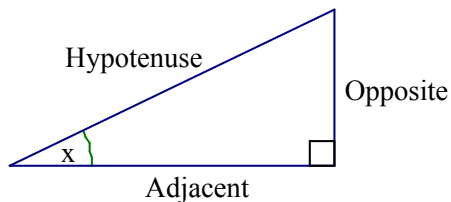
Prove:  $\overline{JD} \cong \overline{HE}$



## Formula sheet for Level 1 Geometry classes, June 2008 final exam.

**Pythagorean triples** 3-4-5    5-12-13    7-24-25    8-15-17    9-40-41

### Trigonometry



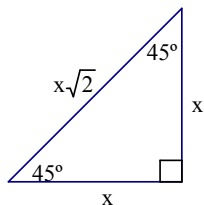
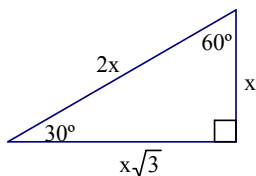
$$s = \frac{o}{h} \quad c = \frac{a}{h} \quad t = \frac{o}{a}$$

$$\sin(x) = \frac{\textit{opposite}}{\textit{hypotenuse}}$$

$$\cos(x) = \frac{\textit{adjacent}}{\textit{hypotenuse}}$$

$$\tan(x) = \frac{\textit{opposite}}{\textit{adjacent}}$$

### Special right triangles



### Polygons

Sum of interior angles

$$S = (n - 2)180$$

### Coordinate geometry

Given points  $A(x_1, y_1)$  and  $B(x_2, y_2)$ :

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\text{Midpoint of } \overline{AB} = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\text{Slope of } \overline{AB} = \frac{\textit{rise}}{\textit{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

### Circumference / Area / Volume

Circle:

$$C = 2\pi r$$

$$A = \pi r^2$$

Triangle:

$$A = \frac{1}{2}bh$$

Quadrilaterals:

Parallelogram:  $A = bh$

Square:  $A = s^2$

Trapezoid:  $A = \frac{1}{2}h(b_1 + b_2)$

Rectangle:  $A = lw$

Quadrilateral with  $\perp$  diagonals:  $A = \frac{1}{2}d_1d_2$

Cylinder:  $V = \pi r^2 h$

Cone:  $V = \frac{1}{3}\pi r^2 h$

Pyramid:  $V = \frac{1}{3}\textit{base area} \cdot h$

Sphere:  $V = \frac{4}{3}\pi r^3$