

Geometry Honors with Mr. VanArsdalen Summer Math

Name: _____ Block: _____

0.1 Congruence & Similarity

1. Solve each proportion

a) $\frac{10}{8} = \frac{n}{10}$

b) $\frac{6}{k} = \frac{2}{3}$

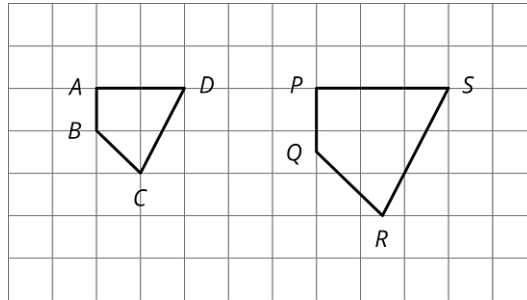
c) $\frac{7}{n} = \frac{8}{7}$

d) $\frac{4}{3} = \frac{8}{x}$

e) $\frac{8}{6} = \frac{x}{3}$

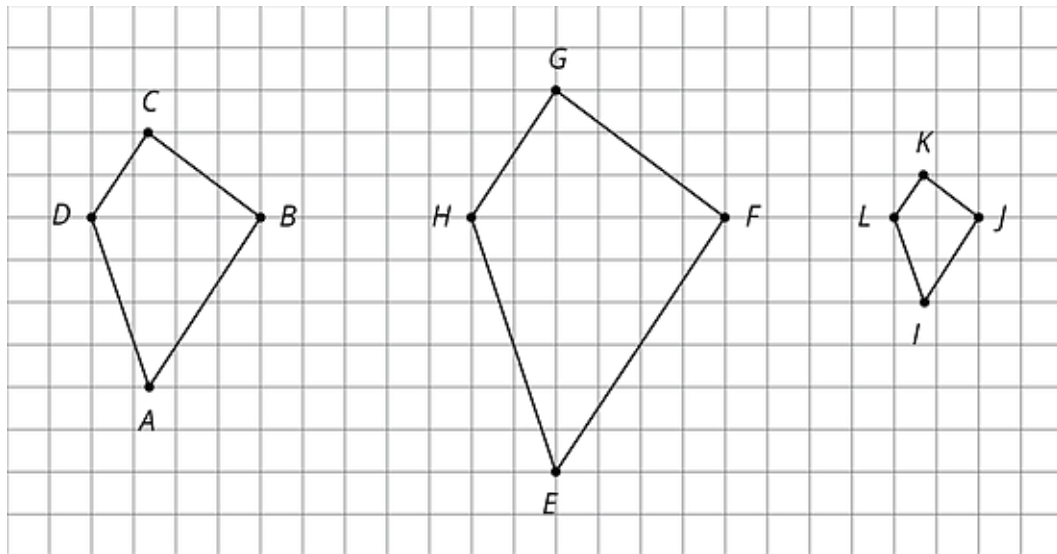
f) $\frac{3x}{4} = \frac{12}{8}$

2. Polygon PQRS is a scaled copy of polygon ABCD



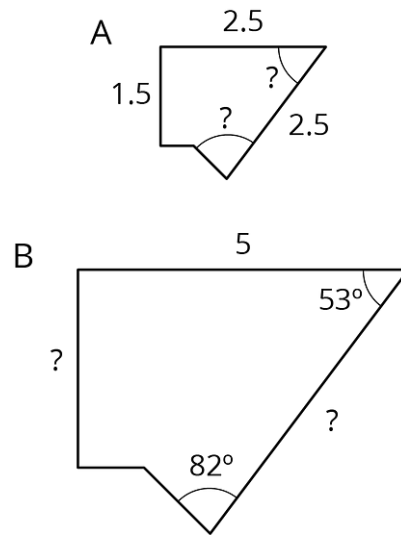
- Name the angle in the scaled copy that corresponds to angle ABC
- Name the segment in the scaled copy that corresponds to segment AD
- What is the scale factor from polygon ABCD to PQRS?

3. Each of these polygons is a scaled copy of the others

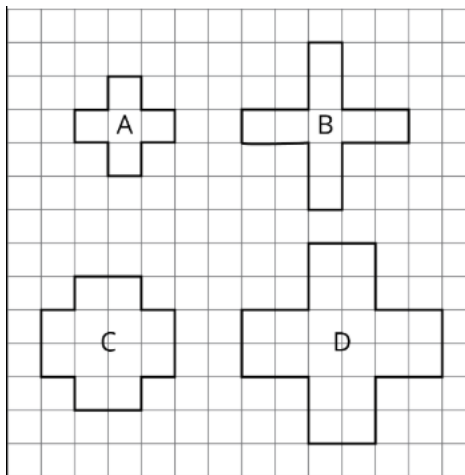


- Name two pairs of corresponding angles. What can you say about the sizes of these angles?
- Check your prediction by measuring at least one pair of corresponding angles using a protractor. Record your measurements to the nearest 5°

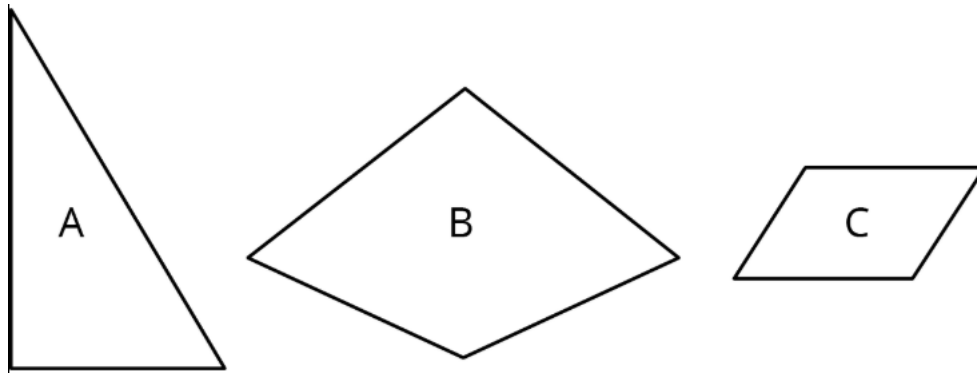
4. Polygon B is a scaled copy of Polygon A



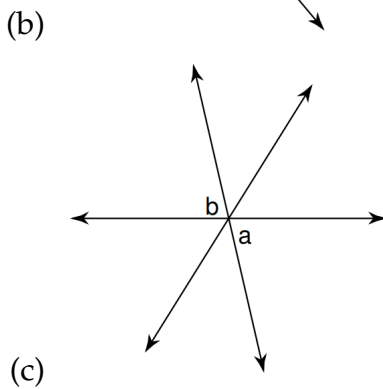
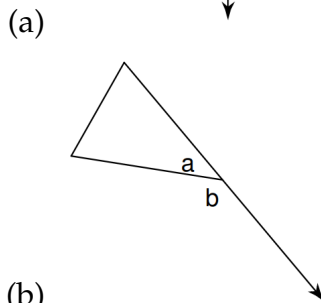
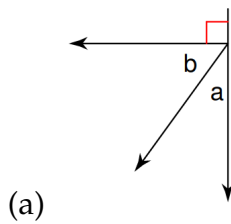
- What is the scale factor from Polygon A to Polygon B? Explain your reasoning.
 - Find the missing length of each side marked with ? in Polygon B
 - Determine the measure of each angle marked ? in Polygon A
5. Which figures are scaled copies of figure A?



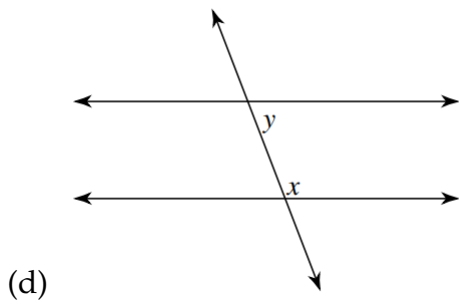
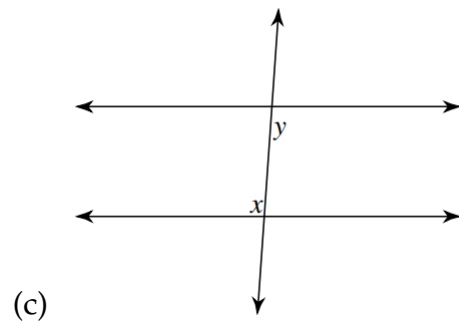
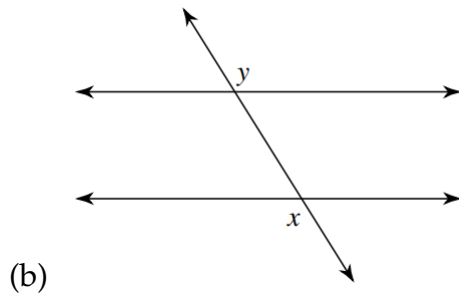
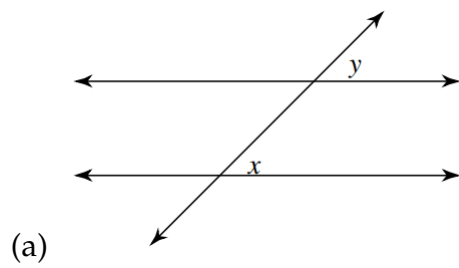
6. Here are 3 polygons



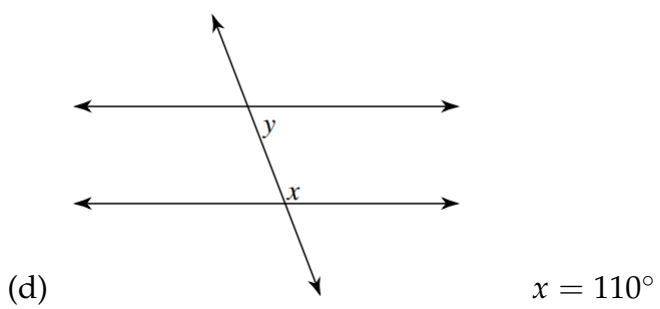
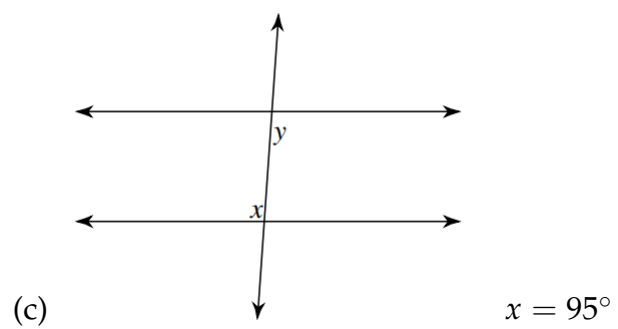
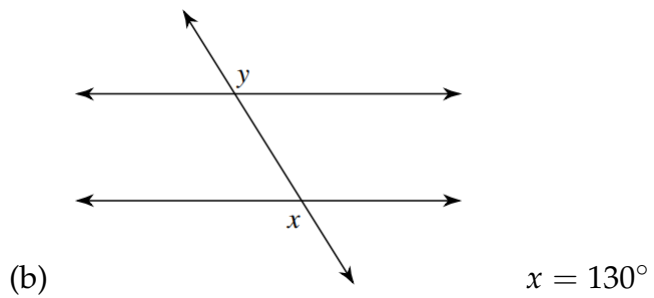
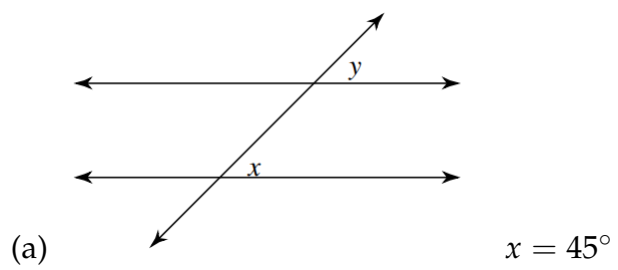
- a) Draw a scaled copy of Polygon A using a scale factor of 2
 - b) Draw a scaled copy of Polygon B using a scale factor of $\frac{1}{2}$
 - c) Draw a scaled copy of Polygon C using a scale factor of 1
7. Name whether the angle pair relationship is vertical, complementary, or supplementary



8. Identify each pair of angles as corresponding, alternate interior, alternate exterior, or consecutive interior

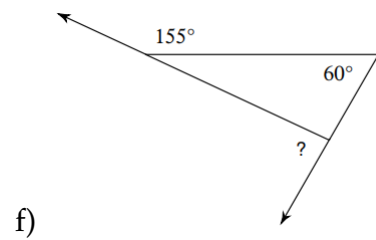
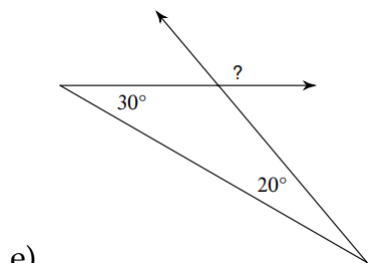
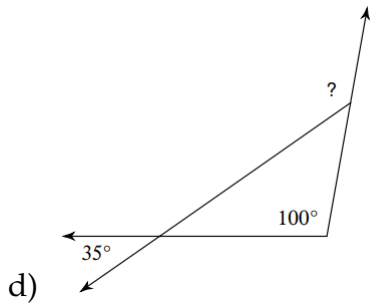
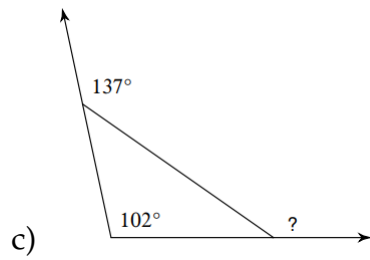
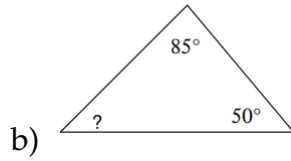
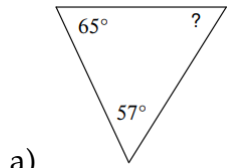


9. Find y when

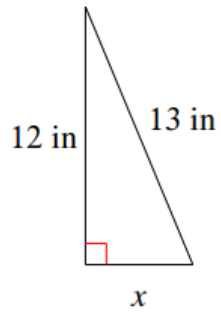


0.2 Triangle Trigonometry

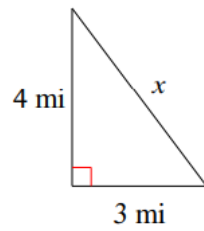
1. Find the measure of each angle indicated by a ?



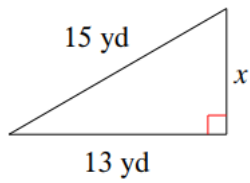
2. Use the Pythagorean Theorem to find the missing side length of each triangle



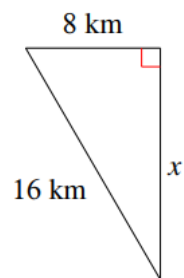
a)



b)

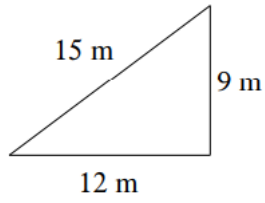


c)

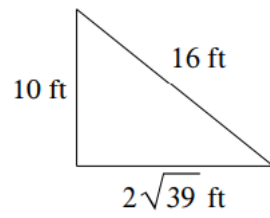


d)

3. Use the Pythagorean Theorem to verify if each triangle is a right triangle



a)



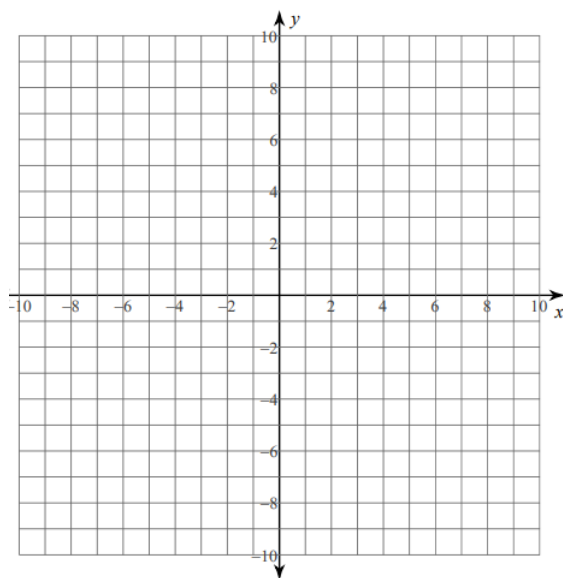
b)

- c) A triangle with side lengths 9in, 12in, 15in
- d) A triangle with side lengths 4km, 28km, 29km
- e) A triangle with side lengths 3cm, 4cm, 5cm

0.3 Analytic Geometry

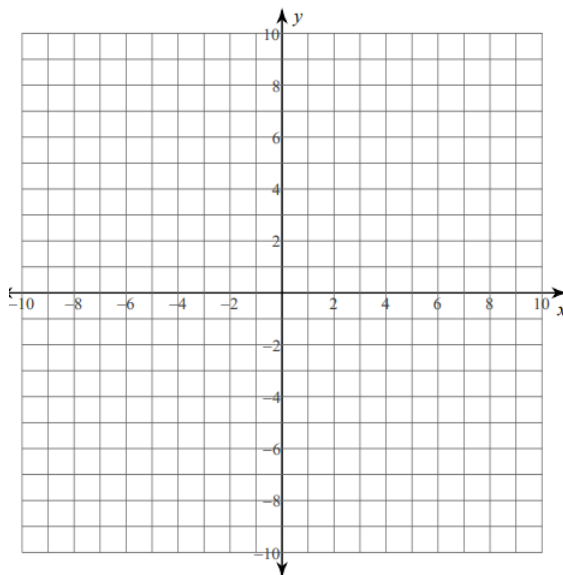
1. Plot each point

$J(5, 10)$ $I(1, 9)$ $H(6, -9)$
 $G(-6, 8)$ $F(9, 0)$ $E(-6, 0)$
 $D(-8, -4)$ $C(5, 0)$ $B(-1, -1)$
 $A(-8, -1)$



a)

$A(7, 10)$ $B(0, 4)$ $C(-1, 10)$
 $D(-6, -6)$ $E(10, 0)$ $F(9, 7)$
 $G(-3, -4)$ $H(-4, -9)$ $I(4, 1)$
 $J(7, -9)$



b)

2. Find the slope of the line through each pair of points

a) $(3, -20), (5, 8)$

b) $(15, 8), (-17, 9)$

c) $(6, 7), (-1, 13)$

d) $(9, 3), (19, -16)$

e) $(6, 12), (-15, 3)$

f) $(4, 0), (7, 11)$

3. Find the slope of each line

a) $4x - 2y = 10$

b) $x + 2y = -8$

c) $3x + 5 = -4y$

d) $-2y - 10 + 2x = 0$

e) $x = 3$

f) $y = 4$

0.4 Conic Sections

1. Factor each quadratic

a) $b^2 + 8b + 7$

b) $n^2 - 10n + 9$

c) $n^2 + 4n - 12$

d) $x^2 + 6x + 9$

e) $3 + 6b + 3b^2$

f) $10n^2 + 100n + 250$

2. Complete the square

a) $x^2 + 8x$

b) $a^2 - 12a$

c) $x^2 - 40x$

d) $y^2 - 24y$

e) $p^2 - 10p$

f) $x^2 + 7x$

3. Find the vertex of the parabola

a) $y = 3x^2 + 12x - 12$

b) $y = 3x^2 - 6x + 1$

c) $y = 2x^2 - 7x + 4$

0.5 Circles & Solid Geometry

1. Find the area of a circle with radius

(a) $r = 12$ in

(b) $r = 14$ km

(c) $r = 3$ cm

(d) $r = 7$ m

(e) $r = 5$ mm

(f) $r = 8$ in

2. Now, find the circumference of a circle with radius
- (a) $r = 12$ in
 - (b) $r = 14$ km
 - (c) $r = 3$ cm
 - (d) $r = 7$ m
 - (e) $r = 5$ mm
 - (f) $r = 8$ in
3. Draw a picture and find the volume of
- a) A cylinder with radius 8 in and height 7 in
 - b) A sphere of radius 4 cm
 - c) A cone with diameter 2 mi and height 3 mi
4. Draw a picture and find the surface area of
- a) A cylinder with radius 4 in and height 6 in
 - b) A cylinder with diameter 4 in and height 10 in
 - c) A sphere with radius 2 m
 - d) A cone with radius 6 cm and height 8 cm

Helpful Links

<https://www.khanacademy.org/math/algebra>

<https://www.khanacademy.org/math/get-ready-for-geometry>

https://www.stewartcalculus.com/_update/media/common/reviewofalgebra.pdf

<https://tutorial.math.lamar.edu/Classes/Alg/Alg.aspx>

<https://www.youtube.com/@patrickjmt/playlists>

<https://www.youtube.com/@TheOrganicChemistryTutor/playlists>