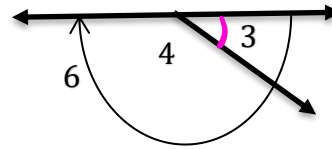
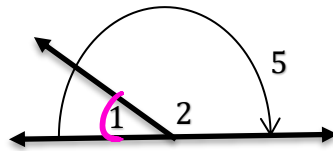


1. Part of a proof is shown. Place statements and reasons in the table to complete the proof.

Given $\angle 1 \cong \angle 3$

Prove $\angle 2 \cong \angle 4$



Statement	Reason
a. $\angle 1 \cong \angle 3$	a. <u>GIVEN</u>
b. $m\angle 1 = m\angle 3$	b. <u>Def'n of Congruent Angles</u>
c. $\angle 1$ and $\angle 2$ are linear pair $\angle 3$ and $\angle 4$ are linear pair	c. <u>Def'n of linear pair</u>
d. $\angle 1$ and $\angle 2$ are Supplementary $\angle 3$ and $\angle 4$ are Supplementary	d. <u>Supplement Theorem</u>
e. $m\angle 1 + m\angle 2 = 180^\circ$ $m\angle 3 + m\angle 4 = 180^\circ$	e. <u>Def'n of Supplementary</u>
f. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	f. <u>Subst PoE</u>
g. $m\angle 3 + m\angle 2 = m\angle 3 + m\angle 4$	g. <u>Subst. PoE</u>
h. $m\angle 2 = m\angle 4$	h. <u>Subtr. PoE</u>
i. $\angle 2 \cong \angle 4$	i. <u>Def'n of Congruent Angles</u>

2	B
3	C
4	$\frac{1.83}{97} \quad \frac{g}{cm^3}$
5	$x+5 = \frac{3}{2}(x+4)$
6	1 or $\frac{1}{1}$ or $\frac{2.5}{2.5}$
7	1324.4 people per square mile (Round your answer to the nearest tenth.)
8	$\frac{4}{3}$
9	$x+2 = -\frac{3}{2}(x-4)$

2. Which term is defined as nonadjacent angles formed by two intersecting lines?

- A. Straight angle
- B. Vertical angle
- C. Corresponding angle
- D. Complementary angle

3. Kevin asked Olivia what the Alternate Interior Angles Theorem is. Olivia responds, "When a transversal intersects two lines, the alternate interior angles are congruent." What is wrong with Olivia's responds?

- A. She should have said the alternate interior angles are supplementary, instead of congruent.
- B. She should have said the alternate interior angles are complementary, instead of congruent.
- C. She should have said the transversal intersects two parallel lines.
- D. She should have said the transversal intersects two perpendicular lines.

4. Jeremy wants to know the density of a pop tart in grams per cubic centimeter. The pop tart has a mass of 0.00183 kilograms and a volume of 97 cubic centimeters.

What is the density of the pop tart, in graphs per cubic centimeter ($\frac{g}{cm^3}$)?

$$\frac{1.83}{97} \frac{g}{cm^3}$$

$$0.00183 \text{ kg} \cdot \frac{1000 \text{ g}}{1 \text{ kg}} = 1.83 \text{ g}$$

5. Line k has a slope of $-\frac{2}{3}$. Line j is perpendicular to line k and passes through the point $(-4, -5)$. Create the equation for line j .

<u>Point</u>	<u>Slope</u>	<u>Point-Slope form</u>
$(-4, -5)$	$m = \frac{3}{2}$	$y - y_1 = m(x - x_1)$
	$\perp m = \frac{3}{2}$	$y + 5 = \frac{3}{2}(x + 4)$

6. \overline{AC} has endpoints $A(3, 4)$ and $C(6, 8)$. Point B is on \overline{AC} and is located at $(4.5, 6)$. What is the ratio of $\frac{AB}{BC}$?

$$AB = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[3-4.5]^2 + [4-6]^2} = \sqrt{[-1.5]^2 + [-2]^2} = \sqrt{2.25 + 4} = \sqrt{6.25} = 2.5$$

$$BC = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[6-4.5]^2 + [8-6]^2} = \sqrt{[1.5]^2 + [2]^2} = \sqrt{2.25 + 4} = \sqrt{6.25} = 2.5$$

$$\frac{AB}{BC} = \frac{2.5}{2.5} = 1$$

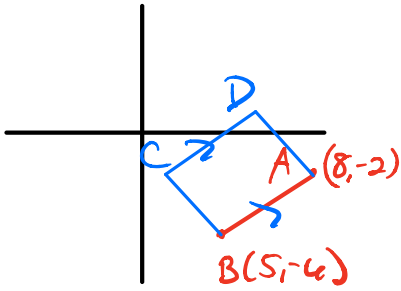
7. A study reports that in 2016 the population of the Gnaden was 1,283 people and the land area was approximately 0.96875 square miles. Based on the study, what was the population density, in people per square mile, of the United States in 2016? Round your answer to the nearest tenth.

$$\frac{1283}{0.96875} \approx 1324.4 \text{ people per square mile}$$

$$\frac{1283 \text{ people}}{0.96875 \text{ mi}^2} \approx 1324.4$$

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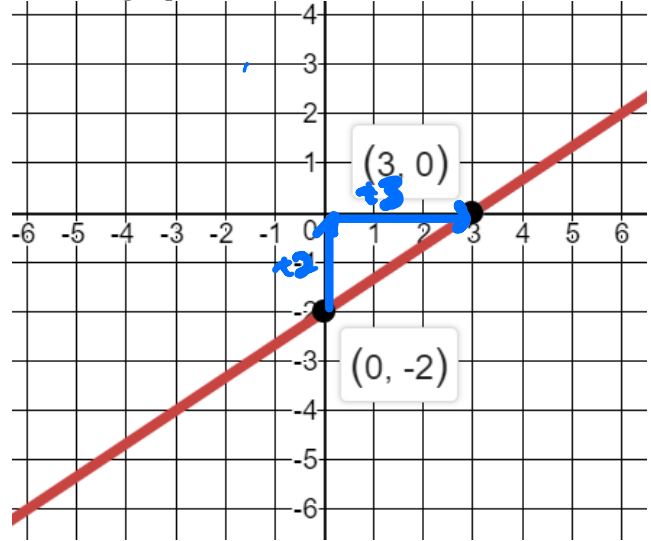
8. Square ABCD has vertices at A(8, -2) and B(5, -6). What is the slope of \overline{CD} ?



$$m_{\overline{AB}} = \frac{\Delta y}{\Delta x} = \frac{-2 - (-6)}{8 - 5} = \frac{4}{3}$$

$$\overline{CD} \parallel \overline{AB} \therefore m_{\overline{CD}} = \frac{4}{3}$$

9. The graph of line m is shown



What is the equation of the line that is perpendicular to line m and passes through the point (4, -2)?

<u>Point</u>	<u>Slope</u>	<u>Point-Slope form</u>
(4, -2)	$m = \frac{2}{3}$	$y - y_1 = m(x - x_1)$
	$\perp m = -\frac{3}{2}$	$y + 2 = -\frac{3}{2}(x - 4)$