

تم تحميل هذا الملف من موقع المناهج الإماراتية



## حل تجميعة أسئلة وفق الهيكل الوزاري منهج ريفيل الجزء الالكتروني

[موقع المناهج](#) ⇨ [المناهج الإماراتية](#) ⇨ [الصف التاسع المتقدم](#) ⇨ [رياضيات](#) ⇨ [الفصل الثالث](#) ⇨ [الملف](#)

تاريخ إضافة الملف على موقع المناهج: 2024-05-26 11:50:15

إعداد: Shamsi Al Sara

## التواصل الاجتماعي بحسب الصف التاسع المتقدم



اضغط هنا للحصول على جميع روابط "الصف التاسع المتقدم"

## روابط مواد الصف التاسع المتقدم على تلغرام

[الرياضيات](#)

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## المزيد من الملفات بحسب الصف التاسع المتقدم والمادة رياضيات في الفصل الثالث

[مراجعة نهائية وفق الهيكل الوزاري منهج ريفيل](#)

1

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المزيد من الملفات بحسب الصف التاسع المتقدم والمادة رياضيات في الفصل الثالث

[والمتعامدة](#)

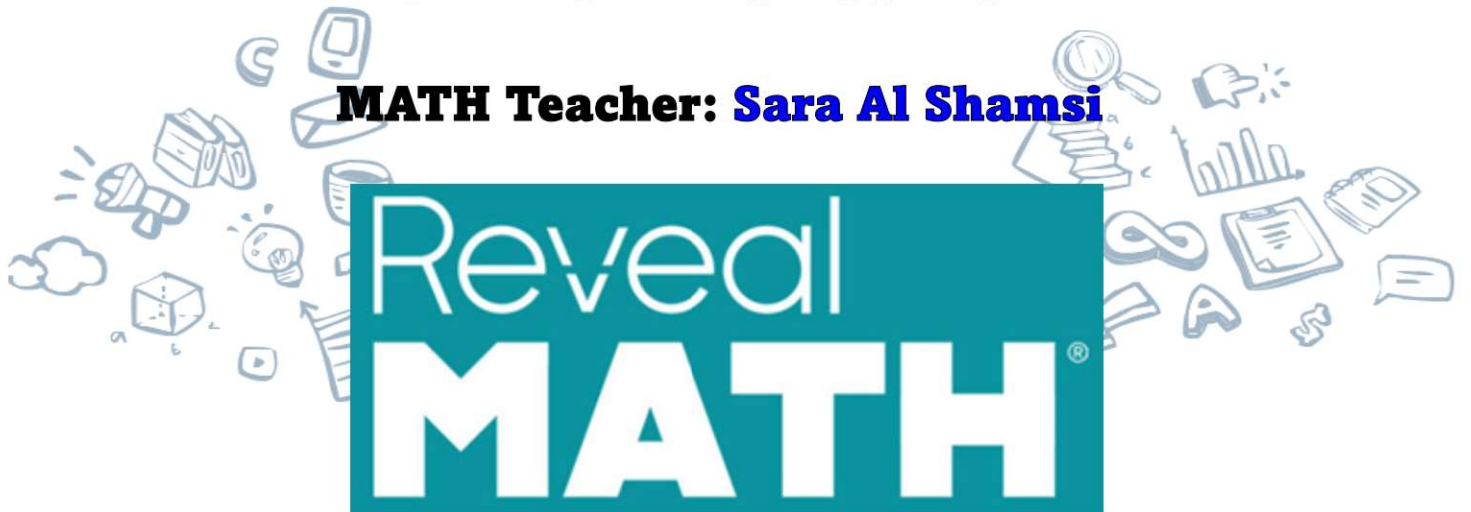


# EoT3

## 9 Advanced - Reveal

**Term 3 – 2023/2024**

**MATH Teacher: Sara Al Shamsi**



# Multiple Choice Questions

Q1

M12L2: Statements, Conditionals, and Biconditionals

1 to 6

Pg 717

## Examples 1 and 2

Use the statements to write a compound statement for each conjunction or disjunction. Then find the truth values. Explain your reasoning.

P	$\sim P$
T	F
F	T

P	Q	$P \wedge Q$
T	T	T
T	F	F
F	T	F
F	F	F

P	Q	$P \vee Q$
T	T	T
T	F	T
F	T	T
F	F	F

✓  $p: -3 - 2 = -5$  T

$\sim p \Rightarrow F$

✓  $q: \text{Vertical angles are congruent.}$  T  $\Rightarrow \sim q \Rightarrow F$

✓  $r: 2 + 8 > 10$  F

$\sim r \Rightarrow T$

1.  $p$  and  $q$   
T T

$p$  and  $q$  True

2.  $p \wedge r$   
T F

False

3.  $q \vee \sim r$   
T T

True

4.  $r \vee q$

5.  $\sim p \wedge \sim q$

6.  $\sim r \vee \sim p$

$p: -3 - 2 = -5$  T

$q: \text{Vertical angles are congruent.}$  T

$r: 2 + 8 > 10$  F

$\sim p$	F
$\sim q$	F
$\sim r$	T

④  $r \vee q$   
F T True

⑤  $\sim p \wedge \sim q$   
F  $\wedge$  F  
False

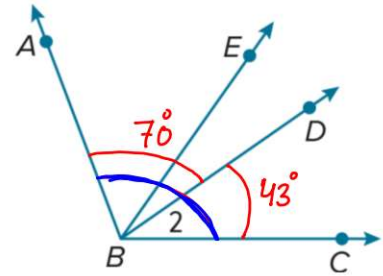
⑥  $\sim r \vee \sim p$   
T F True

**Example 1**

Find the measure of each angle.

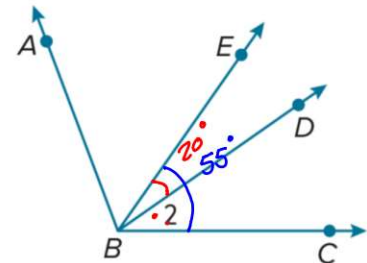
1. Find
- $m\angle ABC$
- if
- $m\angle ABD = 70^\circ$
- and
- $m\angle DBC = 43^\circ$
- .

$$\begin{aligned} m\angle ABC &= m\angle ABD + m\angle DBC \\ &= 70^\circ + 43^\circ \\ &= 113^\circ \end{aligned}$$



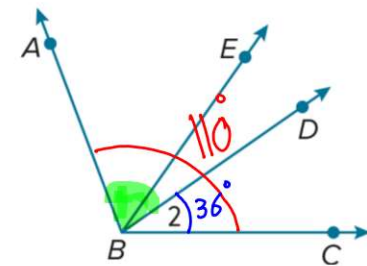
2. If
- $m\angle EBC = 55^\circ$
- and
- $m\angle EBD = 20^\circ$
- , find
- $m\angle 2$
- .

$$\begin{aligned} m\angle 2 &= 55^\circ - 20^\circ \\ &= 35^\circ \end{aligned}$$



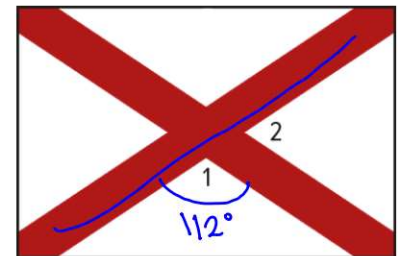
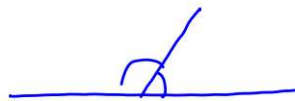
3. Find
- $m\angle ABD$
- if
- $m\angle ABC = 110^\circ$
- and
- $m\angle 2 = 36^\circ$
- .

$$\begin{aligned} m\angle ABD + m\angle 2 &= m\angle ABC \\ m\angle ABD + 36^\circ &= 110^\circ \\ m\angle ABD &= 110^\circ - 36^\circ \\ &= 74^\circ \end{aligned}$$



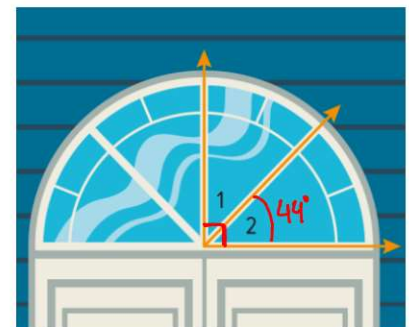
- 4.
- FLAGS**
- The Alabama state flag is white and has
- two diagonal red stripes
- . If the
- $m\angle 1 = 112^\circ$
- , what is
- $m\angle 2$
- ?

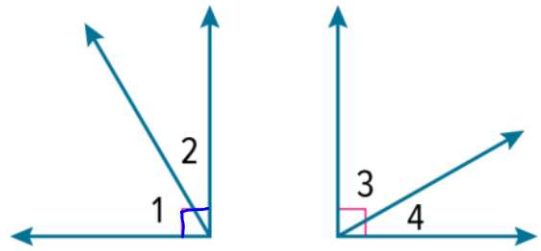
$$\begin{aligned} m\angle 1 + m\angle 2 &= 180^\circ \\ m\angle 2 &= 180^\circ - 112^\circ \\ &= 68^\circ \end{aligned}$$



- 5.
- CONSTRUCTION**
- Alan has installed a new window above the entrance of an office building. If
- $m\angle 2 = 44^\circ$
- , what is
- $m\angle 1$
- ?

$$\begin{aligned} m\angle 1 + m\angle 2 &= 90^\circ \\ m\angle 1 &= 90^\circ - 44^\circ \\ &= 46^\circ \end{aligned}$$

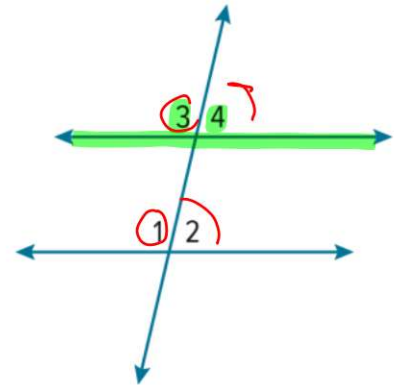


**Example 3****PROOF** Write a two-column proof.6. **Given:**  $\angle 2 \cong \angle 4$ **Prove:**  $\angle 1 \cong \angle 3$ 

Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a right angle. $\angle 3$ and $\angle 4$ form a right angle.	1. Given
2. $\angle 1$ and $\angle 2$ are complementary. $\angle 3$ and $\angle 4$ are complementary.	2. Complement Theorem
3. $\angle 2 \cong \angle 4$	3. Given
4. $\angle 1 \cong \angle 3$	4. Congruent Complements Theorem

7. **Given:**  $\angle 1 \cong \angle 3$ **Prove:**  $\angle 2 \cong \angle 4$ 

Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair. $\angle 3$ and $\angle 4$ form a linear pair.	1. Definition of linear pair
2. $\angle 1$ and $\angle 2$ are supplementary. $\angle 3$ and $\angle 4$ are supplementary.	2. Supplement Theorem
3. $\angle 1 \cong \angle 3$	3. Given
4. $\angle 2 \cong \angle 4$	4. Congruent Supplements Theorem



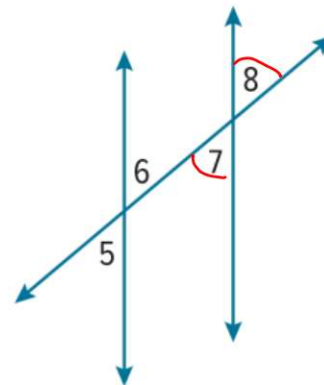
## Example 4

**PROOF** Write a two-column proof.

8. **Given:**  $\angle 5 \cong \angle 7$

**Prove:**  $\angle 5 \cong \angle 8$

Statements	Reasons
1. $\angle 5 \cong \angle 7$	1. Given
2. $\angle 7 \cong \angle 8$	2. Vertical Angles Theorem
3. $\angle 5 \cong \angle 8$	3. Transitive Property of Congruence



## Example 5

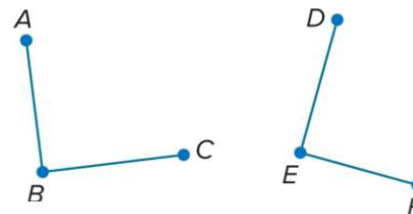
**PROOF** Write a two-column proof.

9. **Given:**  $m\angle ABC = m\angle DEF$

$\angle ABC$  and  $\angle DEF$  are supplementary.

**Prove:**  $\angle ABC$  and  $\angle DEF$  are right angles.

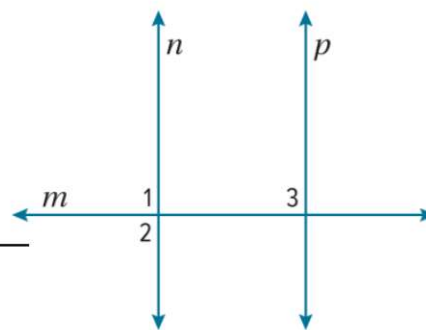
Statements	Reasons
1. $m\angle ABC = m\angle DEF$	1. Given
2. $\angle ABC \cong \angle DEF$	2. Definition of $\cong$ angles
3. $\angle ABC$ and $\angle DEF$ are supplementary.	3. Given
4. $\angle ABC$ and $\angle DEF$ are right angles.	4. If two $\angle$ s are $\cong$ and supplementary, then each $\angle$ is a right $\angle$ .



10. **Given:**  $\angle 1 \cong \angle 2$ ;  $m \perp p$

**Prove:**  $\angle 2 \cong \angle 3$

Statements	Reasons
1. $\angle 1 \cong \angle 2$ ; $m \perp p$	1. Given
2. $\angle 1$ and $\angle 2$ form a linear pair	2. Definition of linear pair
3. $\angle 1$ and $\angle 2$ are right angles.	3. If 2 $\cong$ angles form a linear pair, they are right $\angle$ s.
4. $\angle 3$ is a right angle.	4. $\perp$ lines form 4 rt. angles.
5. $\angle 2 \cong \angle 3$	5. All rt. $\angle$ s are congruent.

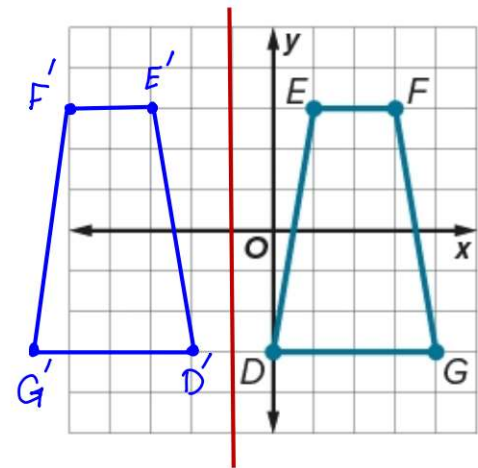
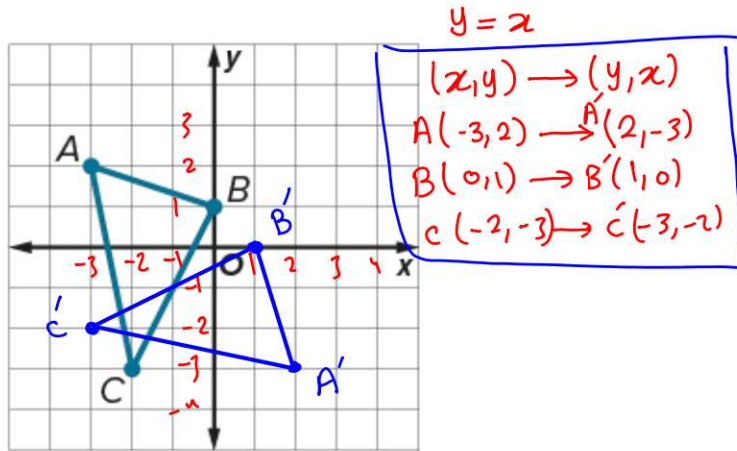


Examples 1 and 2

Graph the image of each figure under the given reflection. Determine the coordinates of the image.

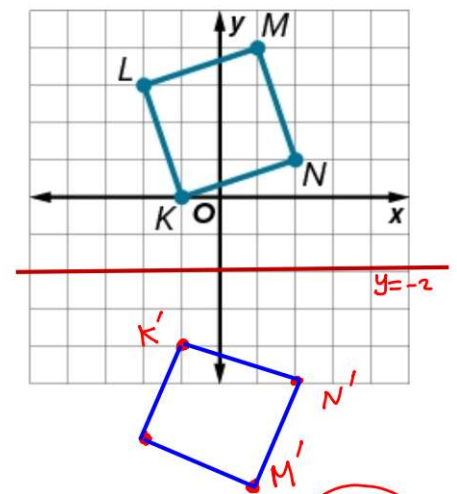
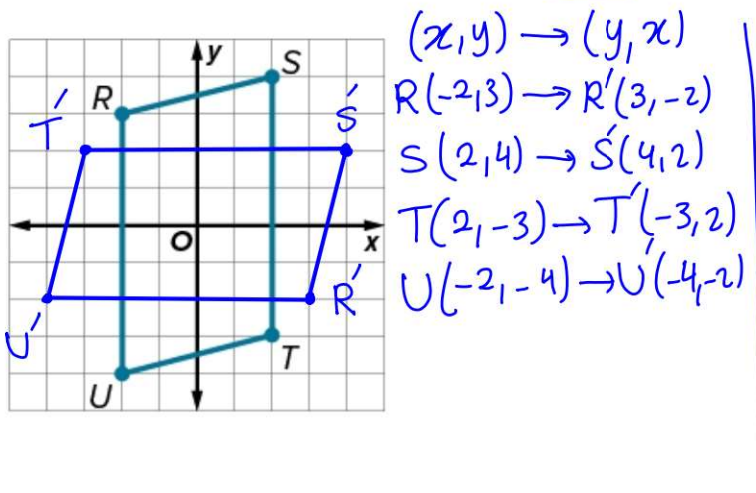
1.  $\triangle ABC$  in the line  $y = x$

2. trapezoid  $DEFG$  in the line  $x = -1$



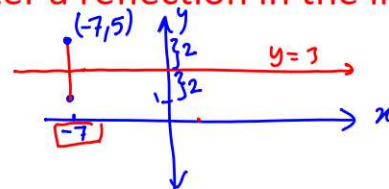
3. parallelogram  $RSTU$  in the line  $y = x$

4. square  $KLMN$  in the line  $y = -2$



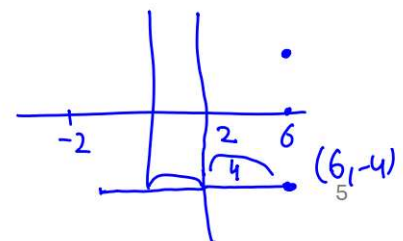
5. Determine the coordinates of  $S(-7, 1)$  after a reflection in the line  $y = 3$ .

Handwritten answer:  $S'(-7, 5)$



6. Determine the coordinates of  $Q(6, -4)$  after a reflection in the line  $x = 2$ .

Handwritten answer:  $Q'(-2, -4)$



$y = m_1x + b_1$   
 $y = m_2x + b_2$   
 Parallel  $m_1 = m_2$   
 perpendicular  $m_1 \cdot m_2 = -1$

Handwritten formula:  $m_1 = -\frac{1}{m_2}$

Ms. Sara Al Shamsi



Determine whether each pair of lines is *parallel*, *perpendicular*, or *neither*.  $y - y_1 = m(x - x_1)$

10.  $y = 2x + 4$ ,  $y = 2x - 10$

$$m_1 = 2 \quad m_2 = 2$$

$$m_1 = m_2$$

Parallel

11.  $y = -\frac{1}{2}x - 12$ ,  $y - 3 = 2(x + 2)$

$$m_1 = -\frac{1}{2} \quad m_2 = 2$$

$$m_1 \cdot m_2 = -\frac{1}{2}(2) = -1$$

perpendicular.

12.  $y - 4 = 3(x + 5)$ ,  $y + 3 = -\frac{1}{3}(x + 1)$

$$m_1 = 3, \quad m_2 = -\frac{1}{3}$$

$$m_1 \cdot m_2 = 3(-\frac{1}{3}) = -1$$

perpendicular

13.  $y - 3 = 6(x + 2)$ ,  $y + 3 = -\frac{1}{3}(x - 4)$

$$m_1 = 6, \quad m_2 = -\frac{1}{3}$$

$$m_1 \neq m_2$$

$$m_1 \cdot m_2 = 6(-\frac{1}{3}) = -2$$

neither

14.  $x = -2$ ,  $y = 10$

vertical line

Horizontal line

perpendicular

15.  $y = 5$ ,  $y = -3$

H. line

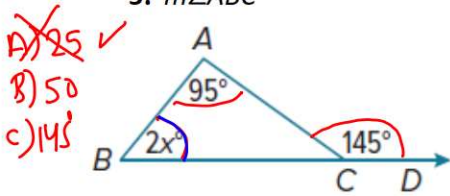
Ho. line

Parallel

$$x = 5, \quad x = -3$$

Parallel

Find each measure.

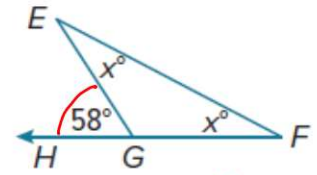
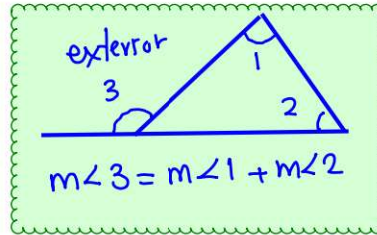
5.  $m\angle ABC$ 

$$2x + 95 = 145$$

$$2x = 50 \div 2$$

$$x = 25$$

$$m\angle ABC = 2x = 2(25) = 50$$

6.  $m\angle F$ 

$$x + x = 58^\circ$$

$$2x = 58^\circ$$

$$x = 29^\circ$$

$$m\angle F = x = 29^\circ$$

7. A lookout tower sits on a network of struts and posts. Leslie measured three angles on the tower. If  $m\angle 1 = (7x - 7)^\circ$ ,  $m\angle 2 = (4x + 2)^\circ$ , and  $m\angle 3 = (2x + 6)^\circ$ , what is  $m\angle 1$ ?

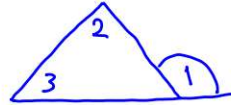
$$m\angle 1 = m\angle 2 + m\angle 3$$

$$7x - 7 = 4x + 2 + 2x + 6$$

$$7x - 7 = 6x + 8$$

$$7x - 6x = 8 + 7$$

$$x = 15$$



- A) 89°  
B) 98° ✓  
C) 15



$$m\angle 1 = 7x - 7 = 7(15) - 7 = 98^\circ$$

8. A gardener uses a grow light to grow vegetables indoors.

If  $m\angle 1 = 8x^\circ$  and  $m\angle 2 = (7x - 4)^\circ$ , what is  $m\angle 1$ ?

$$m\angle 1 + m\angle 2 = 116^\circ$$

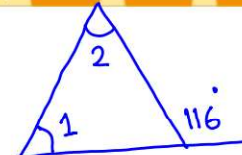
$$8x + 7x - 4 = 116^\circ$$

$$15x - 4 = 116^\circ$$

$$15x = 120$$

$$x = 8$$

$$m\angle 1 = 8x = 8(8) = 64^\circ$$

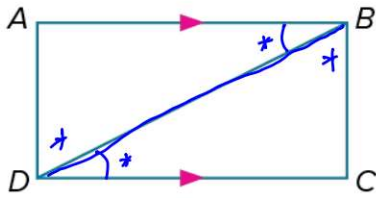


Write the specified type of proof.

1. two-column proof

**Given:**  $\overline{AB} \parallel \overline{CD}$ ,  $\angle CBD \cong \angle ADB$

**Prove:**  $\triangle ABD \cong \triangle CDB$

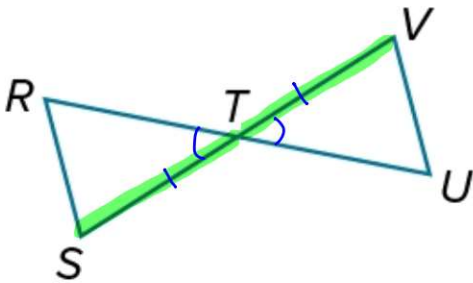


Statements	Reasons
1. $\overline{AB} \parallel \overline{CD}$	1. Given
2. $\angle CBD \cong \angle ADB$	2. Given
3. $\angle ABD \cong \angle CDB$	3. Alternate Interior Angles Theorem
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive Property of Congruence
5. $\triangle ABD \cong \triangle CDB$	5. ASA

2. two-column proof

**Given:**  $\angle S \cong \angle V$ , and  $T$  is the midpoint of  $\overline{SV}$ .

**Prove:**  $\triangle RTS \cong \triangle UTV$

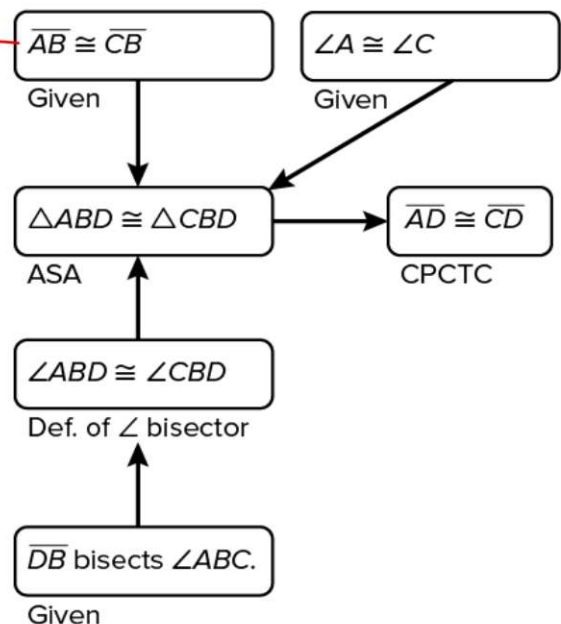
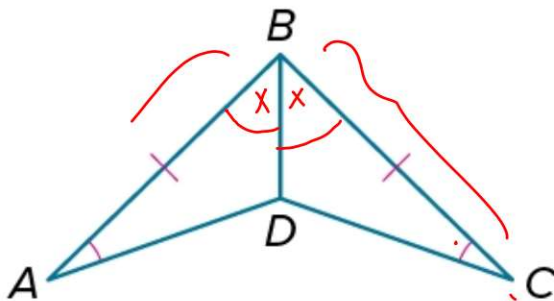


Statements	Reasons
1. $\angle S \cong \angle V$	1. Given
2. $T$ is the midpoint of $\overline{SV}$ .	2. Given
3. $\overline{ST} \cong \overline{TV}$	3. Definition of midpoint
4. $\angle RTS \cong \angle UTV$	4. Vertical Angles Theorem
5. $\triangle RTS \cong \triangle UTV$	5. ASA

3. flow proof

**Given:**  $\overline{AB} \cong \overline{CB}$ ,  $\angle A \cong \angle C$ , and  $\overline{DB}$  bisects  $\angle ABC$ .

**Prove:**  $\overline{AD} \cong \overline{CD}$

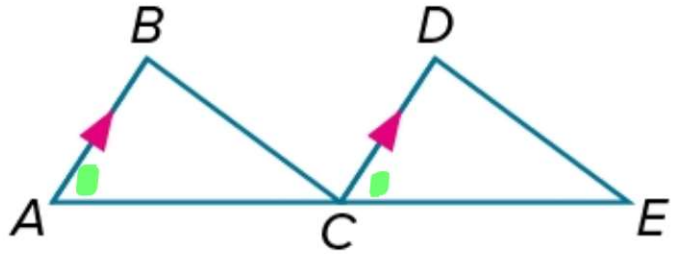


CPCTC = Corresponding Parts of Congruent Triangles are Congruent

4. paragraph proof

**Given:**  $\overline{CD}$  bisects  $\overline{AE}$ ,  $\overline{AB} \parallel \overline{CD}$ , and  $\angle E \cong \angle BCA$ .

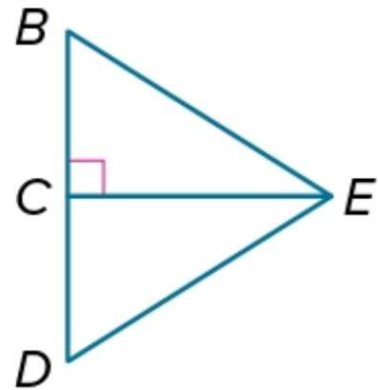
**Prove:**  $\triangle ABC \cong \triangle CDE$



**Proof:** It is given that  $\angle E \cong \angle BCA$  and  $\overline{CD}$  bisects  $\overline{AE}$ . Since  $\overline{CD}$  bisects  $\overline{AE}$ , by the definition of bisector,  $\overline{AC} \cong \overline{CE}$ . We are also given that  $\overline{AB} \parallel \overline{CD}$ . By considering segment  $AE$  as the transversal, we can use this to determine that  $\angle A$  is congruent to  $\angle DCE$  by the **Corresponding Angles Theorem**. From this we know that  $\triangle ABC \cong \triangle CDE$  by the

5. paragraph proof

**Given:**  $\overline{CE}$  bisects  $\angle BED$ ,  $\angle BCE$  and  $\angle ECD$  are right angles.

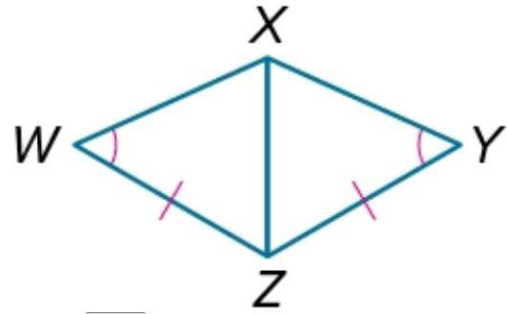


**Proof:** We are given that  $\overline{CE}$  bisects  $\angle BED$  and that  $\angle BCE$  and  $\angle ECD$  are right angles. Because all right angles are congruent,  $\angle BCE \cong \angle ECD$ . By the definition of angle bisector,  $\angle BEC \cong \angle DEC$ . The Reflexive Property tells us that  $\overline{EC} \cong \overline{EC}$ . By Angle-Side-Angle Congruence Postulate,  $\triangle ECB \cong \triangle ECD$ .

6. paragraph proof

**Given:**  $\angle W \cong \angle Y$ ,  $\overline{WZ} \cong \overline{YZ}$ , and  $\overline{XZ}$  bisects  $\angle WZY$ .

**Prove:**  $\triangle XWZ \cong \triangle XYZ$



**Proof:** It is given that  $\angle W \cong \angle Y$ ,  $\overline{WZ} \cong \overline{YZ}$ , and  $\overline{XZ}$  bisects  $\angle WZY$ .

Therefore,  $\angle WZX \cong \angle YZX$  by the definition of angle bisector. We can now state that  $\triangle XWZ \cong \triangle XYZ$  by applying the Angle-Side-Angle Congruence Postulate.

Determine which postulate can be used to prove that the triangles are congruent.

ASA

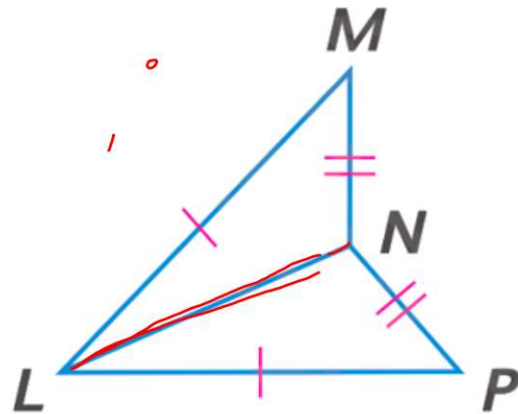
SAS

SSS

Nothing

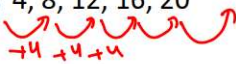
لا يوجد

حدّد المسلمة التي يمكن استخدامها لإثبات أن المثلثين متطابقان.



Write a conjecture that describes the pattern in each sequence. Then use your conjecture to find the next term in the sequence.

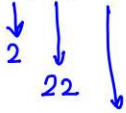
1. 4, 8, 12, 16, 20



Each term in the pattern is four more than the previous term

The next number in the sequence is 24

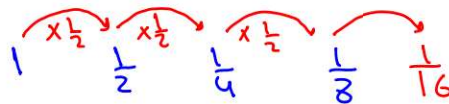
2. 2, 22, 222, 2222, 22222



Each term has an additional digit two as part of the number

The next number in the sequence 22222

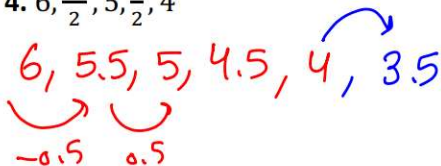
3.  $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}$



Each term is one half the previous term.

The next number in the sequence is  $\frac{1}{16}$

4.  $6, \frac{11}{2}, 5, \frac{9}{2}, 4$



Each term is one half less than the previous term

The next number in the sequence is 3.5

5. Arrival times: 3:00 P.M., 12:30 P.M., 10:00 A.M., ..7:30 AM

Each arrival time is 2 hours and 30 minutes prior to the previous arrival time

The next number in the sequence is 7:30 AM

6. Percent humidity: 100%, 93%, 86%, ... 79%



Each percentage is 7% less than the previous percentage

The next number in the sequence is 79%

Write a conjecture that describes the pattern in the sequence. Then use your conjecture to find the next term in the sequence.

Percent humidity: 100%, 93%, 86%, ...

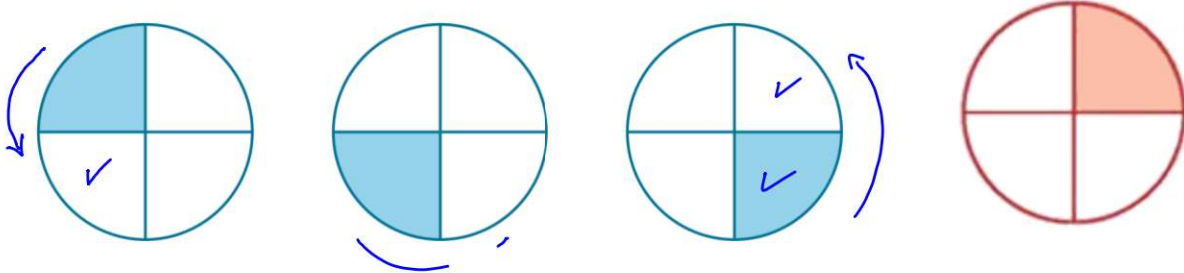
اكتب الفرضية التي تصف النمط في المتتالية. ثم استخدم الفرضية لإيجاد الحد التالي في المتتالية.

نسبة الرطوبة: 100%, 93%, 86%, ...

- A) كل حد هو نصف الحد السابق، الحد التالي هو 80%  
Each term is one half the previous term; the next term is 80%
- B) كل حد يزيد عن الحد السابق بمقدار 7%، الحد التالي هو 75%  
Each term is 7% more than the previous term; the next term is 75%
- C) كل حد هو أقل من الحد السابق بمقدار 7%، الحد التالي هو 79%  
Each term is 7% less than the previous term; the next term is 79%
- D) كل حد هو أقل من الحد السابق بمقدار 10%، الحد التالي هو 76%  
Each term is 10% less than the previous term; the next term is 76%

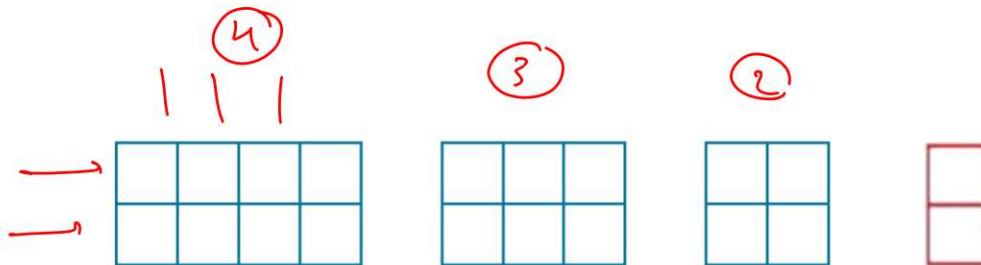
Write a conjecture that describes the pattern in each sequence. Then use your conjecture to find the next term in the sequence.

7.



The shaded section in each circle has moved one section counterclockwise from its location in the previous circle.

8.



Each figure has one fewer column of squares than the previous figure.

Identify the transversal connecting each pair of angles. Then classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior* angles.

8.  $\angle 4$  and  $\angle 5$

Line a  
Consecutive interior

9.  $\angle 5$  and  $\angle 15$

Line d  
alternate exterior

10.  $\angle 12$  and  $\angle 14$

Line b  
alternate interior

11.  $\angle 7$  and  $\angle 15$

Line d  
Corresponding

12.  $\angle 2$  and  $\angle 12$

Line c  
alternate interior

13.  $\angle 3$  and  $\angle 6$

Line a  
Consecutive interior

14.  $\angle 1$  and  $\angle 9$

Line c  
Corresponding

15.  $\angle 3$  and  $\angle 9$

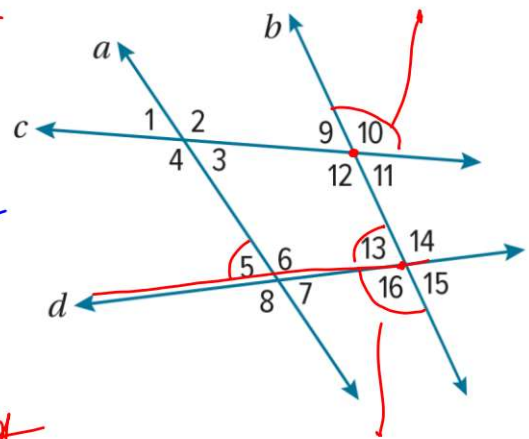
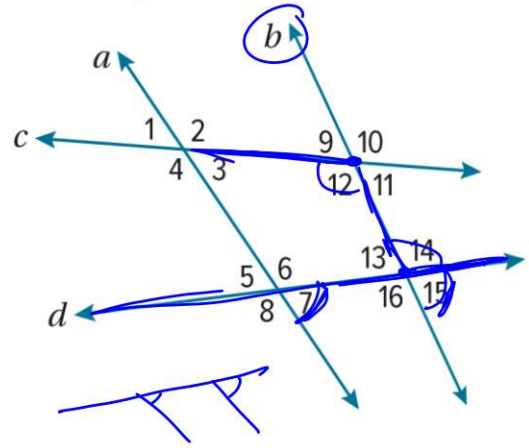
Line c  
alternate interior

16.  $\angle 10$  and  $\angle 16$

Line b  
alternate exterior

17.  $\angle 5$  and  $\angle 13$

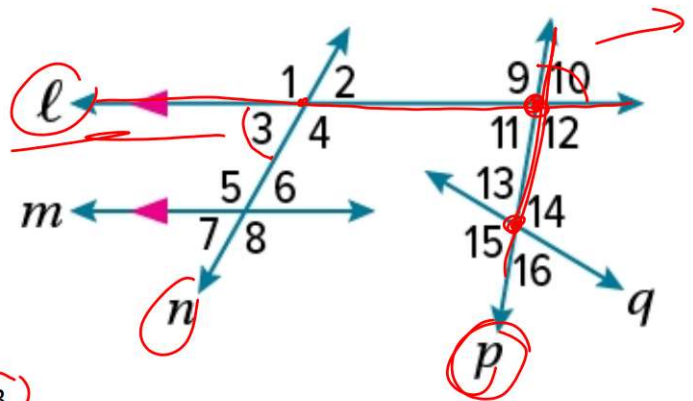
Line d  
Corresponding



For Exercises 18 and 19, use the figure.

18. What type of angles are  $\angle 3$  and  $\angle 10$ ?

alternate exterior angles



19. State the transversal that connects  $\angle 11$  and  $\angle 13$ .

Line p



Write an equation in slope-intercept form for each line described.

$y = mx + b$

22. passes through  $(-7, -4)$ , perpendicular to  $y = \frac{1}{2}x + 9$

$y = \frac{1}{2}x + 9 \Rightarrow m_1 = \frac{1}{2}$   
 perpendicular  $m_2 = -\frac{1}{m_1} = -2$

$m_1 \cdot m_2 = -1$   
 $\frac{1}{2} m_2 = -1 \Rightarrow m_2 = -2$

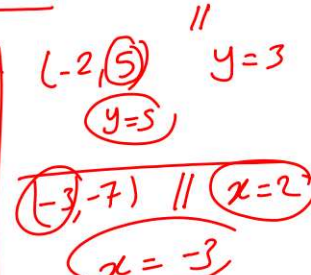
$y = mx + b$   
 $= -2x + b$   
 $-4 = -2(-7) + b$   
 $b = -18$

$y = -2x - 18$

23. passes through  $(-1, -10)$ , parallel to  $y = 7$

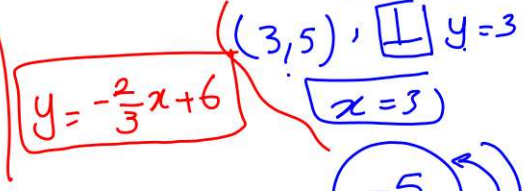
$y = 7$  [Horizontal Line]  $m_1 = 0$   
 Parallel  $m_2 = m_1 = 0$   
 $y = -10$

$y = mx + b$   
 $= 0 + b$   
 $y = b$



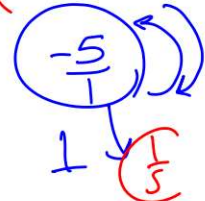
24. passes through  $(6, 2)$ , parallel to  $y = -\frac{2}{3}x + 1$

$y = -\frac{2}{3}x + 1 \Rightarrow m_1 = -\frac{2}{3}$   
 Parallel  $m_2 = m_1 = -\frac{2}{3}$   
 $y = -\frac{2}{3}x + b$   
 $2 = -\frac{2}{3}(6) + b$   
 $2 = -4 + b$   
 $b = 6$



25. passes through  $(-2, 2)$  perpendicular to  $y = -5x - 8$

$y = -5x - 8 \Rightarrow m_1 = -5$   
 perpendicular  $m_1 \cdot m_2 = -1 \Rightarrow -5 m_2 = -1 \Rightarrow m_2 = \frac{1}{5}$

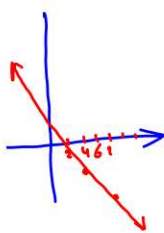


$y = \frac{1}{5}x + b$   
 $2 = \frac{1}{5}(-2) + b$   
 $b = \frac{12}{5}$   
 $y = \frac{1}{5}x + \frac{12}{5}$

Mixed Exercises

Find the value of x or y that satisfies the given conditions. Then graph the line.

26. The line containing  $(4, -2)$  and  $(x, -6)$  is perpendicular to the line containing  $(-2, -9)$  and  $(3, -4)$ .

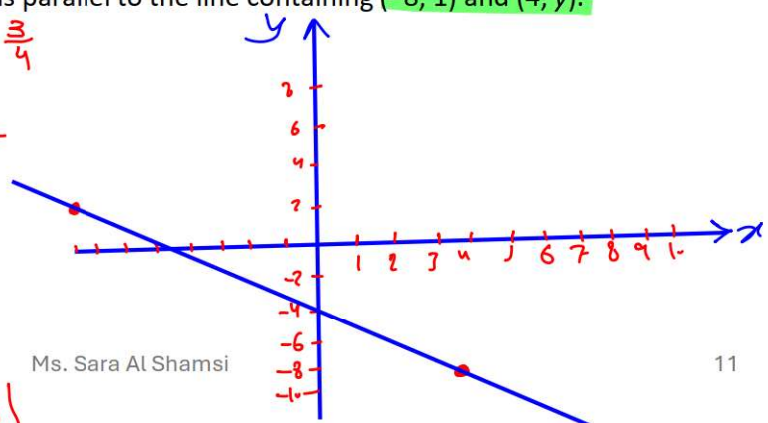


$m_1 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6 - (-2)}{x - 4} = \frac{-4}{x - 4}$   
 $m_2 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - (-9)}{3 - (-2)} = \frac{5}{5} = 1$

$m_1 \cdot m_2 = -1$   
 $\frac{-4}{x - 4} \times 1 = -1$   
 $\frac{-4}{x - 4} = -1 \Rightarrow x - 4 = 4$   
 $x = 8$

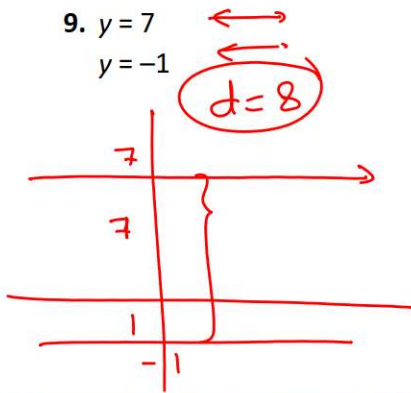
27. The line containing  $(-4, 9)$  and  $(4, 3)$  is parallel to the line containing  $(-8, 1)$  and  $(4, y)$ .

$m_1 = \frac{3 - 9}{4 - (-4)} = \frac{-6}{8} = -\frac{3}{4}$   
 $m_2 = \frac{y - 1}{4 - (-8)} = \frac{y - 1}{12}$   
 Parallel  $m_1 = m_2$   
 $-\frac{3}{4} = \frac{y - 1}{12}$   
 $4y - 4 = -36$   
 $4y = -32 \Rightarrow y = -8$

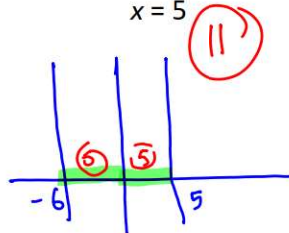


Find the distance between each pair of parallel lines with the given equations.

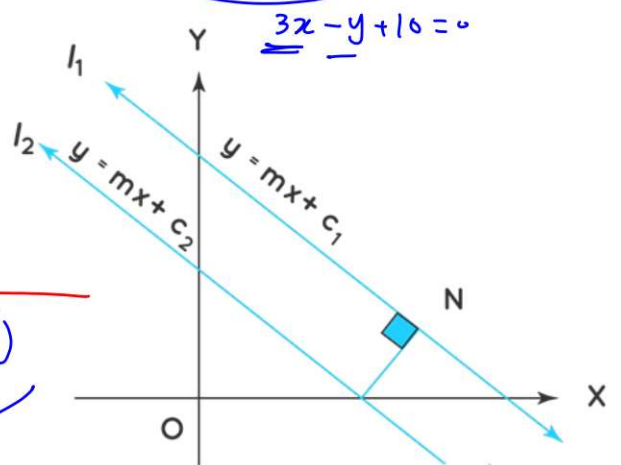
9.  $y = 7$   
 $y = -1$



10.  $x = -6$   
 $x = 5$



11.  $y = 3x$   
 $y = 3x + 10$



(11)  $y = 3x \Rightarrow x = 0 \Rightarrow y = 0$  (0,0)

$$d = \frac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$$

$$= \frac{|3(0) - 1(0) + 10|}{\sqrt{9 + 1}}$$

$$= \frac{10}{\sqrt{10}} = \sqrt{10}$$

$$d = \frac{|c_2 - c_1|}{\sqrt{1 + m^2}}$$

$y = 3x$   
 $y = 3x + 10$

$$d = \frac{|10 - 0|}{\sqrt{1 + 9}}$$

$$= \sqrt{10}$$

12.  $y = -5x$   $m = -5$   
 $y = -5x + 26$   $c_1 = 0$   
 $c_2 = 26$

$$d = \frac{|c_2 - c_1|}{\sqrt{1 + m^2}}$$

$$= \frac{|26 - 0|}{\sqrt{1 + (-5)^2}}$$

$$= \frac{26}{\sqrt{26}}$$

$$= \sqrt{26}$$

13.  $y = x + 9$   $m = 1$   
 $y = x + 3$   $c_1 = 9$   
 $c_2 = 3$

$$d = \frac{|3 - 9|}{\sqrt{1 + 1^2}}$$

$$= \frac{6}{\sqrt{2}}$$

$$= 3\sqrt{2}$$

14.  $y = -2x + 5$   $m = -2$   
 $y = -2x - 5$   $c_1 = 5$   
 $c_2 = -5$

$$d = \frac{|-5 - 5|}{\sqrt{1 + (-2)^2}}$$

$$= \frac{10}{\sqrt{5}}$$

$$= 2\sqrt{5}$$

Find the distance between each pair of parallel lines with the given equations.

15.  $y = \frac{1}{4}x + 2$

$4y - x = -60 \Rightarrow 4y = x - 60$

$y = \frac{1}{4}x + 2$  |  $m = \frac{1}{4}$   
 $y = \frac{1}{4}x - 15$  |  $c_1 = 2$   
 $c_2 = -15$

$d = \frac{|-15 - 2|}{\sqrt{1 + (\frac{1}{4})^2}}$

$= 4\sqrt{17}$

16.  $3x + y = 3$

$y + 17 = -3x$

$y = -3x + 3$   
 $y = -3x - 17$

$m = -3$   
 $c_1 = 3$   
 $c_2 = -17$

$d = \frac{|-17 - 3|}{\sqrt{1 + (-3)^2}}$

$= \frac{20}{\sqrt{10}} = 2\sqrt{10}$

17.  $y = -\frac{5}{4}x + 3.5$

$4y + 10.6 = -5x$

$y = -\frac{5}{4}x + 3.5$   $c_1$

$4y = -5x - 10.6$

$y = -\frac{5}{4}x - \frac{21}{8}$   $c_2$

$c_1 = 3.5$   
 $c_2 = -\frac{21}{8}$   
 $m = -\frac{5}{4}$

GC1 \*

$(x_1, y_1)$   $ax + by + c = 0$   
 $d = \frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}}$

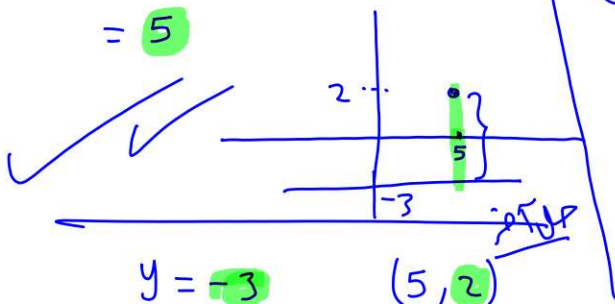
Find the distance from the line to the given point.

18.  $y = -3; (5, 2)$

$y + 3 = 0$

$d = \frac{|5(0) + 1(2) + 3|}{\sqrt{0^2 + 1^2}}$

$= 5$



$d = |-3 - 2| = 5$

19.  $y = \frac{1}{6}x + 6; (-6, 5)$

$y - \frac{1}{6}x - 6 = 0$

$-x + 6y - 36 = 0$

$d = \frac{|-(-6) + 6(5) - 36|}{\sqrt{(-1)^2 + 6^2}}$

$= 0$

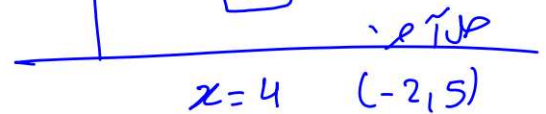
20.  $x = 4; (-2, 5)$

$x - 4 = 0$

$x + 0y - 4 = 0$

$d = \frac{|1(-2) + 0(5) - 4|}{\sqrt{1^2 + 0^2}}$

$= 6$



$d = |4 - (-2)| = 6$

Use the given information to determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

1.  $\angle 3 \cong \angle 7$

Lines  $a$  and  $b$  are cut by transversal  $\ell$ .  
 $a \parallel b$

by the Alternate Interior Angles Converse.

2.  $\angle 9 \cong \angle 11$

Lines  $a$  and  $b$  are cut by transversal  $m$ .  
 $a \parallel b$

by the Converse of Corresponding Angles Theorem.

3.  $\angle 2 \cong \angle 16$

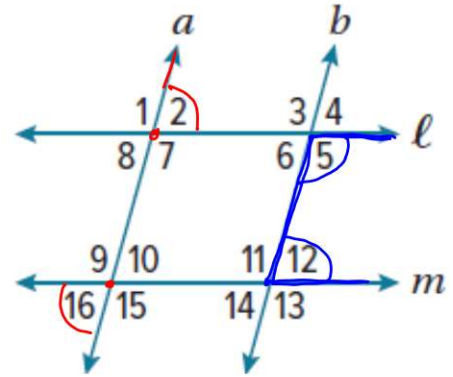
Lines  $\ell$  and  $m$  are cut by transversal  $a$ .  
 $\ell \parallel m$

by the Alternate Exterior Angles Converse.

4.  $m\angle 5 + m\angle 12 = 180^\circ$

Lines  $\ell$  and  $m$  are cut by transversal  $b$ .  
 $\ell \parallel m$

by the Consecutive Interior Angles Converse.



Given the following information, determine which lines, if any, are parallel. State the theorem that justifies your answer.

5.  $\angle 1 \cong \angle 6$

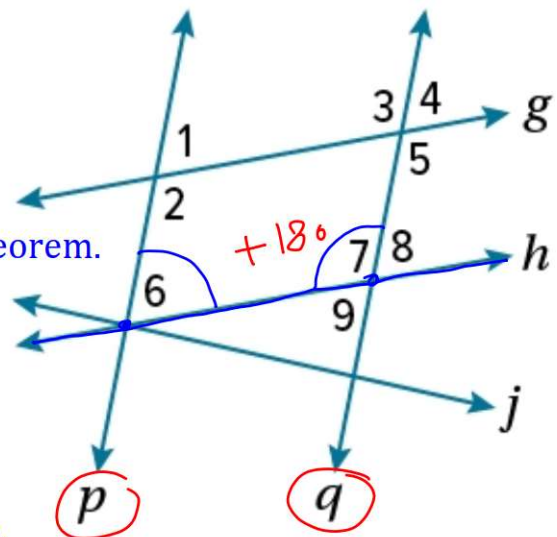
Lines  $g$  and  $h$  are cut by transversal  $p$ .  
 $g \parallel h$

by the Converse of Corresponding Angles Theorem.

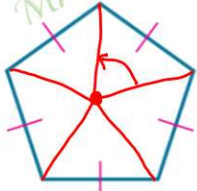
6.  $m\angle 7 + m\angle 6 = 180^\circ$

Lines  $p$  and  $q$  are cut by transversal  $h$ .  
 $p \parallel q$

by the Consecutive Interior Angles Converse.



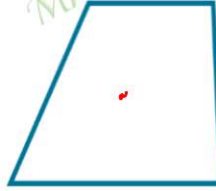
State the order and magnitude of symmetry. Determine whether each figure has rotational symmetry. If so, locate the center of symmetry and state the order and magnitude of symmetry.



Rational symmetry: Yes

Order: 5

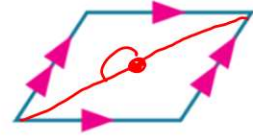
Magnitude:  $\frac{360}{5} = 72^\circ$



Rational symmetry: NO

Order: None

Magnitude: None



Rational symmetry: Yes

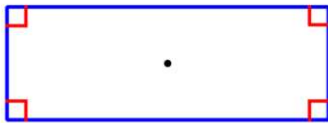
Order: 2

Magnitude:  $\frac{360}{2} = 180^\circ$

Which figure(s) in Part A has point symmetry? Justify your reasoning.

The parallelogram has point symmetry because it can be rotated  $180^\circ$  about its center so it maps onto itself.

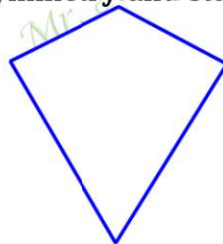
State the order and magnitude of symmetry. Determine whether each figure has rotational symmetry. If so, locate the center of symmetry and state the order and magnitude of symmetry.



Rational symmetry: Yes

Order: 2

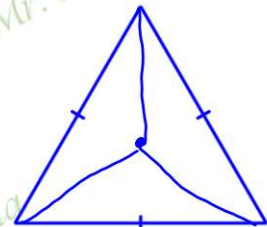
Magnitude:  $\frac{360}{2} = 180^\circ$



Rational symmetry: NO

Order: None

Magnitude: None



Rational symmetry: Yes

Order: 3

Magnitude:  $\frac{360}{3} = 120^\circ$

Which figure(s) in Part A has point symmetry? Justify your reasoning.

The rectangle has point symmetry because it can be rotated  $180^\circ$  about its center so it maps onto itself.

Name the image of each point after the given translation vector.

8.  $F(-3, 1); \langle 5, -1 \rangle$

$$(x, y) \longrightarrow (x+5, y-1)$$

$$F(-3, 1) \longrightarrow F'(-3+5, 1-1) = (2, 0)$$

9.  $Q(4, -2); \langle -2, -5 \rangle$

$$(x, y) \longrightarrow (x-2, y-5)$$

$$(4, -2) \longrightarrow (4-2, -2-5)$$

$$(2, -7)$$

10.  $P(9, 1.5); \langle 3, -0.5 \rangle$

$$(x, y) \longrightarrow (x+3, y-0.5)$$

$$(9, 1.5) \longrightarrow (9+3, 1.5-0.5)$$

$$= (12, 1)$$

$$-3+a=6$$

11. The image of  $A(-3, -5)$  under a translation is  $A'(6, -1)$ . Find the image of  $B(3, -2)$  under the same translation.

$$\begin{array}{l} A \longrightarrow A' \\ (x, y) \longrightarrow (x+a, y+b) \\ (-3, -5) \longrightarrow (-3+a, -5+b) \\ (6, -1) \end{array}$$

$$\begin{array}{l} -3+a=6 \\ \boxed{a=9} \end{array} \quad \begin{array}{l} -5+b=-1 \\ \boxed{b=4} \end{array}$$

$$\langle 9, 4 \rangle$$

$$\boxed{B}$$

$$(x, y) \longrightarrow (x+9, y+4)$$

$$B(3, -2) \longrightarrow B'(12, 2)$$

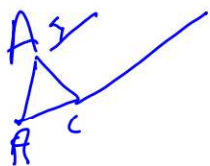
12. Explain why  $\triangle A'B'C'$  with vertices  $A'(-1, -2)$ ,  $B'(0, 0)$ , and  $C'(-6, 0)$  is not a translation image of  $\triangle ABC$  with vertices  $A(1, 2)$ ,  $B(0, 0)$ , and  $C(6, 0)$ .

$$\begin{array}{l} A \longrightarrow A' \\ (1, 2) \longrightarrow (-1, -2) \\ 1+a=-1 \quad 2+b=-2 \\ \boxed{a=-2} \quad \boxed{b=-4} \end{array}$$

$$\begin{array}{l} B \longrightarrow B' \\ (0, 0) \longrightarrow (0, 0) \\ 0+a=0 \quad 0+b=0 \\ a=0 \quad b=0 \end{array}$$

$$\langle 0, -4 \rangle$$

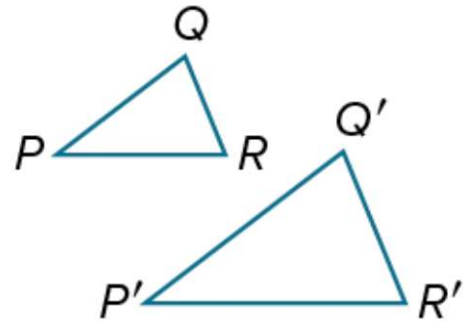
$$\langle 0, 0 \rangle$$



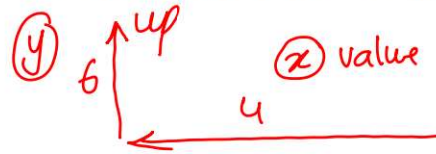
All the point of triangle are not moved the same distance or in the same direction

13. Determine whether  $\triangle P'Q'R'$  is a translation image of  $\triangle PQR$ . Explain.

As seen from inspection, the image is larger than the preimage.  
It cannot be a translation image because the size has been changed.



14. Determine the translation vector that moves every point of a preimage 4 units left and 6 units up.



$$\langle -4, 6 \rangle$$

Find the measure of each numbered angle.

1.

$$m\angle 1 + 60^\circ + 90^\circ = 180^\circ$$

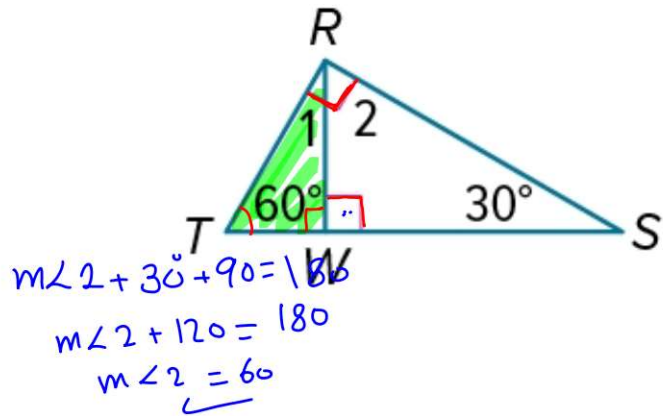
$$m\angle 1 + 150^\circ = 180^\circ$$

$$m\angle 1 = 30^\circ$$

$$m\angle 1 + m\angle 2 = 90^\circ$$

$$30^\circ + m\angle 2 = 90^\circ$$

$$m\angle 2 = 60^\circ$$

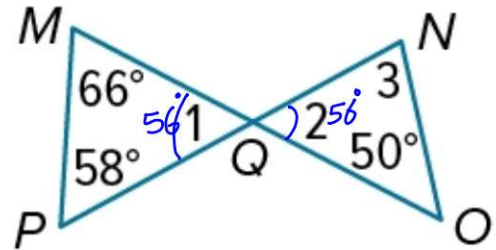


2.

$$m\angle 1 + 66^\circ + 58^\circ = 180^\circ$$

$$m\angle 1 + 124^\circ = 180^\circ$$

$$m\angle 1 = 56^\circ$$



$$m\angle 1 = m\angle 2 \quad \text{(vertical angles)}$$

$$= 56^\circ$$

$$m\angle 3 + 56^\circ + 50^\circ = 180^\circ$$

$$m\angle 3 + 106^\circ = 180^\circ$$

$$\Rightarrow m\angle 3 = 74^\circ$$

3.

$$m\angle 1 + 35^\circ + 36^\circ = 180^\circ$$

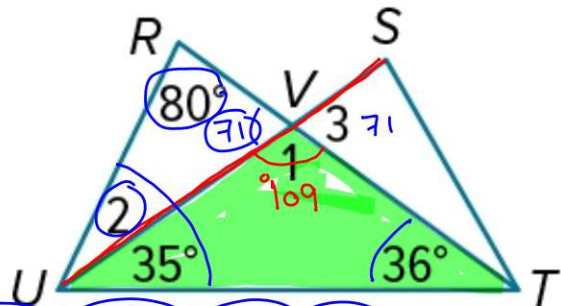
$$m\angle 1 + 71^\circ = 180^\circ$$

$$m\angle 1 = 109^\circ$$

$$m\angle 1 + m\angle 3 = 180^\circ$$

$$109^\circ + m\angle 3 = 180^\circ$$

$$m\angle 3 = 71^\circ$$



$\angle 3$  exterior  $\Delta UTU$   
 $m\angle 3 = 35^\circ + 36^\circ = 71^\circ$

$\Delta RTU$

$$80^\circ + m\angle 2 + 35^\circ + 36^\circ = 180^\circ$$

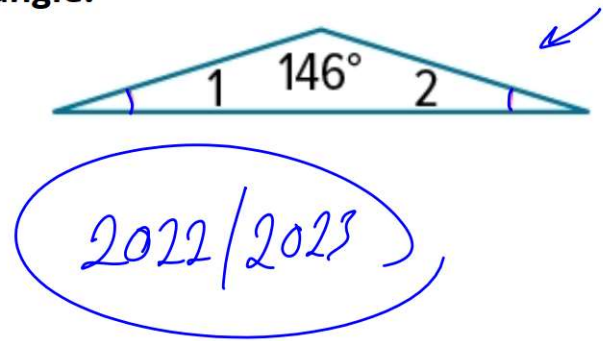
$$m\angle 2 + 151^\circ = 180^\circ \Rightarrow m\angle 2 = 29^\circ$$



Find the measure of each numbered angle.

4.

$$\begin{aligned} m\angle 1 &= m\angle 2 \\ &= \frac{180 - 146}{2} \\ &= \frac{34}{2} \\ &= 17^\circ \end{aligned}$$

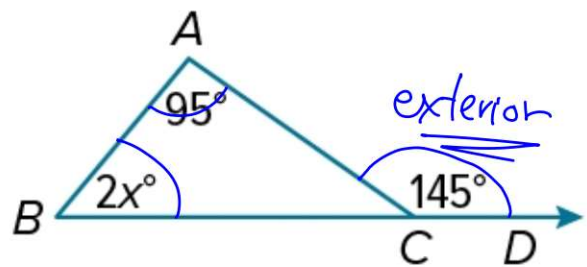


Find each measure.

5.  $m\angle ABC$ 

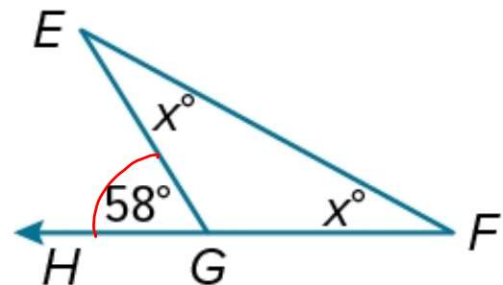
$$\begin{aligned} 2x + 95^\circ &= 145^\circ \\ 2x &= 50^\circ \\ \boxed{x = 25} \end{aligned}$$

$$\begin{aligned} m\angle ABC &= 2x \\ &= 2(25) = 50^\circ \end{aligned}$$

6.  $m\angle F$ 

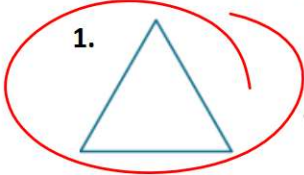
$$\begin{aligned} x + x &= 58^\circ \\ 2x &= 58^\circ \quad \div 2 \\ x &= 29^\circ \end{aligned}$$

$$m\angle F = x = 29^\circ$$



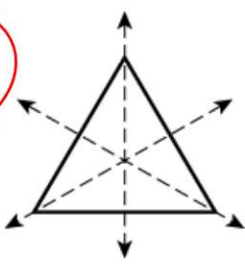
Square

Determine whether each figure has a line of symmetry. If so, draw the lines of symmetry and state how many lines of symmetry it has.



yes

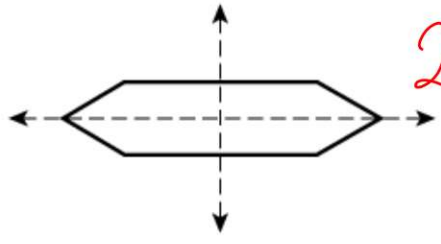
3 Lines



yes

2 Lines

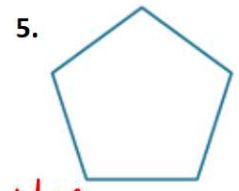
Z



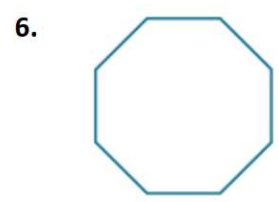
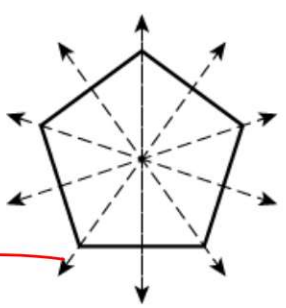
No



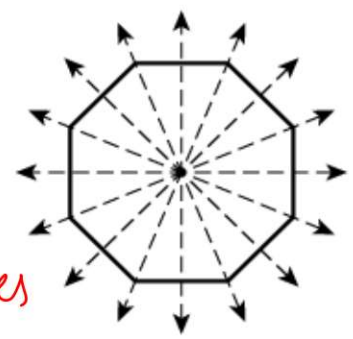
No'



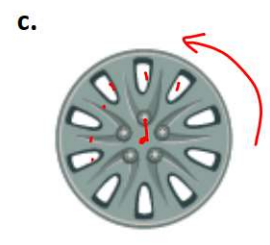
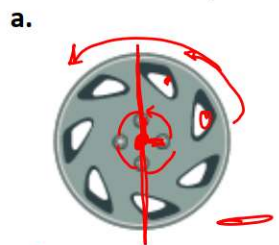
yes  
5 Lines



yes  
8 Lines



7. **CARS** Steve found the hubcaps shown below at his local junkyard. Determine whether each hubcap has rotational symmetry. Explain.



✓ a. Yes; the hubcap can map onto itself with a rotation that is less than 360°.

b. No; no rotation less than 360° maps the hubcap onto itself.

c. Yes; the hubcap can map onto itself with a rotation that is less than 360°.

The End of MCQ