

EoT1_Coverage_Mathematics

G10_Gen_Reveal

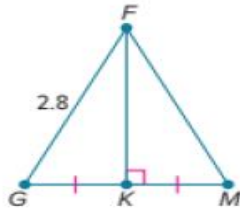
24-23

Academic Year	2023/2024
العام الدراسي	
Term	1
الفصل	
Subject	Mathematics/Reveal
المادة	الرياضيات / ريفيل
Grade	10
الصف	
Stream	General
المسار	العام

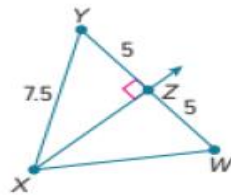
Sajah Ababneh

Find each measure.

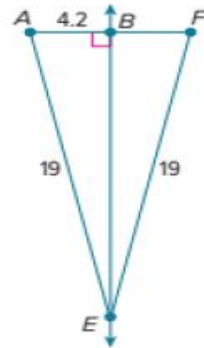
1. FM



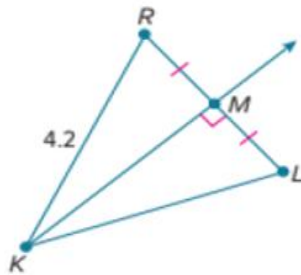
2. XW



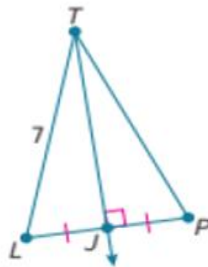
3. BF



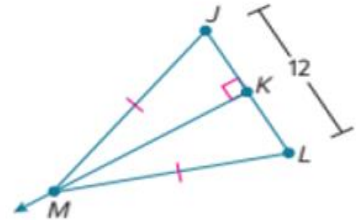
4. KL



5. TP

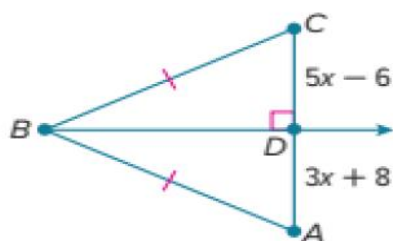


6. KL

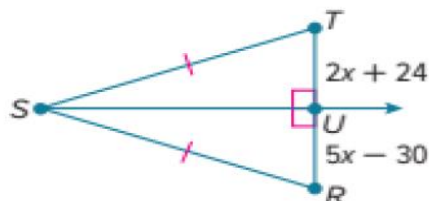


Find the value of x .

11.

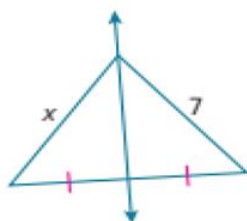


12.

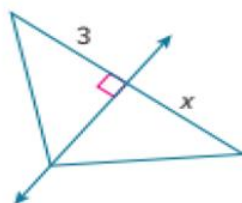


Determine whether there is enough information given in each diagram to find the value of x . If there is, find the value of x . If there is not, explain what needs to be given.

13.



14.



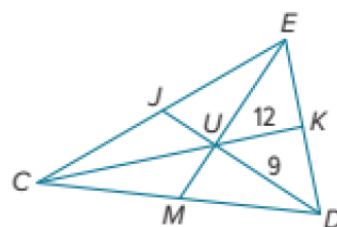
In $\triangle CDE$, U is the centroid, $UK = 12$, $EM = 21$, and $UD = 9$. Find each measure.

1. CU

2. MU

3. EU

4. JD



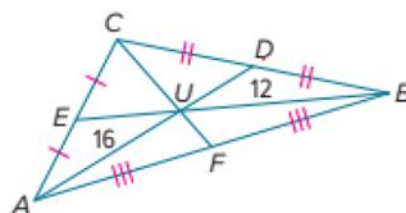
In $\triangle ABC$, $AU = 16$, $BU = 12$, and $CF = 18$. Find each measure.

5. CU

6. AD

7. UF

8. BE

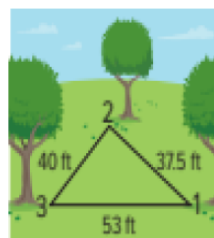


Find the coordinates of the centroid of each triangle with the given vertices.

9. $X(-3, 15)$ $Y(1, 5)$, $Z(5, 10)$

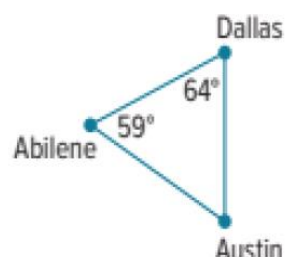
10. $S(2, 5)$, $T(6, 5)$, $R(10, 0)$

12. **SPORTS** The figure shows the position of three trees on one part of a disc golf course. At which tree position is the angle between the trees the greatest?



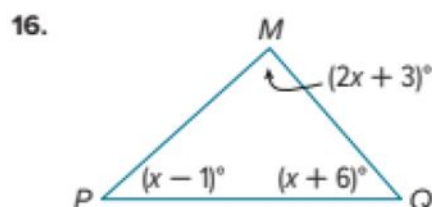
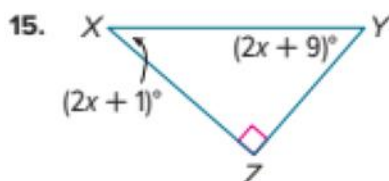
13. **NEIGHBORHOOD** Cain and Remy live on the same straight road. From their balconies, they can see a flagpole in the distance. The angle that each person's line of sight to the flagpole makes with the road is the same. How do their distances from the flagpole compare?

14. **MAPS** Sata is going to Texas to visit a friend. As she looked at a map to see where she might want to go, she noticed that Austin, Dallas, and Abilene form a triangle. She wanted to determine how the distances between the cities were related, so she used a protractor to measure two angles.



- Based on the information in the figure, which of the two cities are nearest to each other?
- Based on the information in the figure, which of the two cities are farthest apart from each other?
- If you were going to use the information from Sata's sketch to plan a road trip between these cities, what is an assumption that you would have to make?

REASONING List the angles and sides of each triangle in order from smallest to largest.



4	Solve problems by applying the Exterior Angle Inequality Theorem	1 to 5	31
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List the angles that satisfy the stated condition.

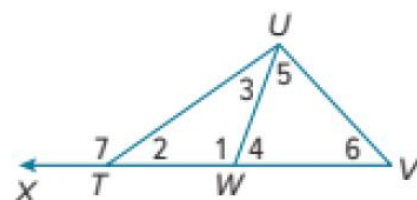
1. measures are greater than $m\angle 3$

2. measures are less than $m\angle 1$

3. measures are greater than $m\angle 1$

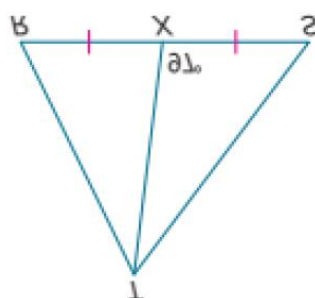
4. measures are less than $m\angle 7$

5. measures are greater than $m\angle 2$



5	Prove and apply the Hinge Theorem	1 to 4	49
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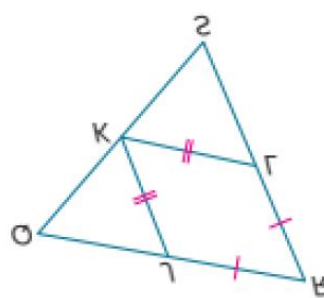
- FLIGHT** Two planes take off from the same airstrip. The first plane flies west for 150 miles and then flies 30° south of west for 220 miles. The second plane flies east for 220 miles and then flies x° south of east for 150 miles. If $x < 30$, which plane is farther from the airstrip after the second leg? Justify your answer.
- HIKING** Gen and Ari start hiking from the same point. Gen hikes 5 miles due east and turns to hike 4.5 miles 30° south of east. Ari hikes 5 miles due west and turns to hike 4.5 miles 15° north of west.
 - Draw a model to represent the situation.
 - Who is closer to the starting point? Explain your reasoning.



PROVE: $ZB > BZ$

3. GIVEN: $BX = XZ$; $m\angle Z = 21$

PROOF Write a two-column proof.



PROVE: $BZ > OB$

of $\triangle Z$ and $m\angle ZKT > m\angle OKT$

4. GIVEN: $\overline{OK} \cong \overline{KB}$, $\overline{OG} \cong \overline{GB}$, K is the midpoint

6

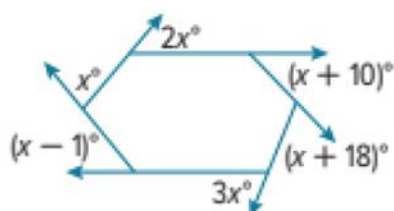
Prove and use the Polygon Exterior Angles Sum Theorem

15 to 24

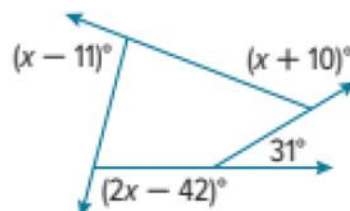
64, 65

Find the value of x in each diagram.

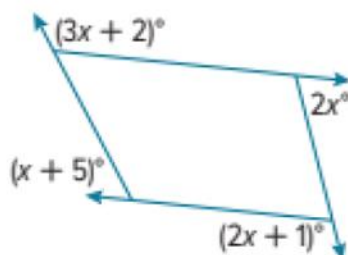
15.



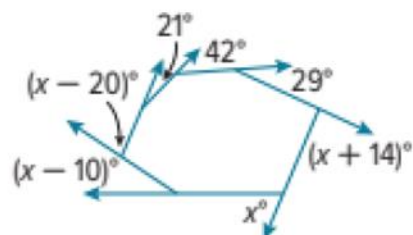
16.



17.



18.



Find the measure of each exterior angle of each regular polygon.

19. pentagon

20. 15-gon

21. hexagon

22. octagon

23. nonagon

24. 12-gon

1	prove and use theorems about the properties of parallelograms	7 to 8	17
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Example 1

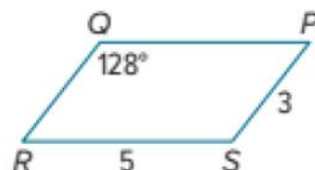
Use $\square PQRS$ to find each measure.

1. $m\angle R$

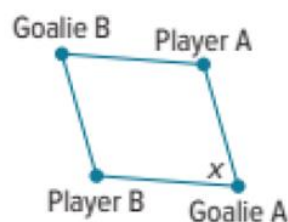
2. QR

3. QP

4. $m\angle S$



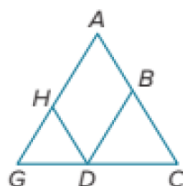
5. **SOCCER** Four soccer players are practicing a drill. Goalie A is facing Player B to receive the ball. Goalie A then turns x° to face Player A to pass her the ball. If Goalie B is facing Player A to receive the ball, then through what angle measure should Goalie B turn to pass the ball to Player B?



PROOF For 6–7, write a two-column proof.

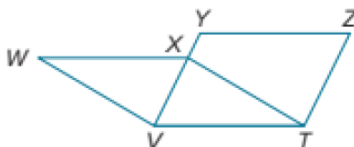
6. Given: $\square BDHA$, $\overline{CA} \cong \overline{CG}$

Prove: $\angle BDH \cong \angle G$



7. Given: $WXTV$ and $YZTV$ are parallelograms.

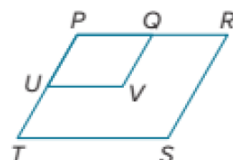
Prove: $\overline{WX} \cong \overline{YZ}$



8. Write a paragraph proof.

Given: $\square PRST$ and $\square PQVU$

Prove: $\angle V \cong \angle S$



8	Recognize and apply the properties of rectangles	1 to 14	87
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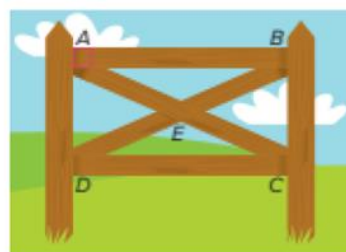
FENCING X-braces are also used to provide support in rectangular fencing. If $AB = 6$ feet, $AD = 2$ feet, and $m\angle DAE = 65^\circ$, find each measure. Round to the nearest tenth, if necessary.

1. BC

2. DB

3. $m\angle CEB$

4. $m\angle EDC$



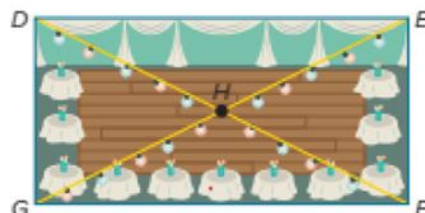
PROM The prom committee is decorating the venue for prom and wants to hang lights above the diagonals of the rectangular room. If $DH = 44.5$ feet, $EF = 39$ feet, and $m\angle GHF = 128^\circ$, find each measure.

5. DG

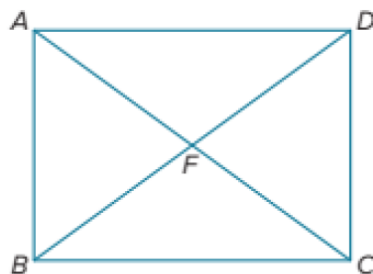
6. GE

7. $m\angle EHF$

8. $m\angle HEF$

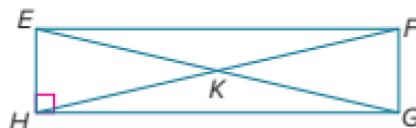


9. Quadrilateral $ABCD$ is a rectangle. If $m\angle ADB = (4x + 8)^\circ$ and $m\angle DBA = (6x + 12)^\circ$, find the value of x .



Quadrilateral $EFGH$ is a rectangle. Use the given information to find each measure.

10. If $m\angle FEG = 57^\circ$, find $m\angle GEH$.



11. If $m\angle HGE = 13^\circ$, find $m\angle FGE$.

12. If $FK = 32$ feet, find EG .

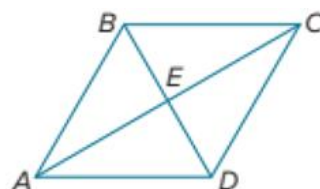
13. Find $m\angle HEF + m\angle EFG$.

14. If $EF = 4x - 6$ and $HG = x + 3$, find EF .

9	Recognize and apply the properties of rhombi and squares	1 to 10	95
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Examples 1 and 2

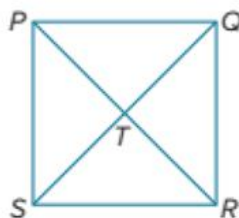
Quadrilateral $ABCD$ is a rhombus. Find each value or measure.



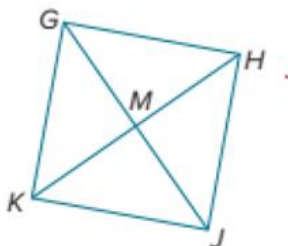
- If $m\angle ABD = 60^\circ$, find $m\angle BDC$.
- If $AE = 8$, find AC .
- If $AB = 26$ and $BD = 20$, find AE .
- Find $m\angle CEB$.
- If $m\angle CBD = 58^\circ$, find $m\angle ACB$.
- If $AE = 3x - 1$ and $AC = 16$, find x .
- If $m\angle CDB = 6y^\circ$ and $m\angle ACB = (2y + 10)^\circ$, find the value of y .
- If $AD = 2x + 4$ and $CD = 4x - 4$, find the value of x .

Example 3

9. $PQRS$ is a square. If $PR = 42$, find TR .

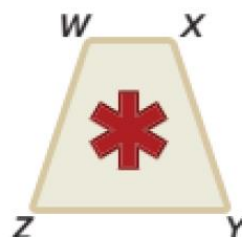


10. $GHJK$ is a square. If $KM = 26.5$, find KH .



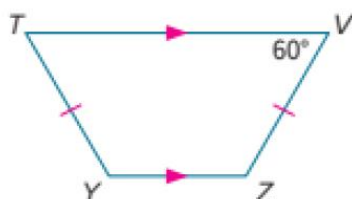
1. **SIGNS** The medical sign shown is a trapezoidal prism. The front face of the sign is an isosceles trapezoid. $WX = 2x - 2$, $YZ = 2x + 6$, $WZ = 4x + 5$, and $XY = 5x - 3$.

- Prove $x = 8$.
- Find $m\angle Z$ if $m\angle W = 106^\circ$.
- Find the perimeter of the front face of the sign in inches.

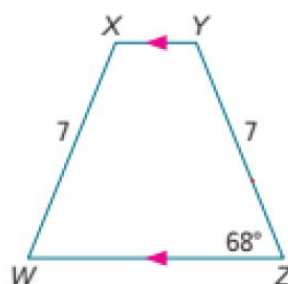


Find each measure.

2. $m\angle T$



3. $m\angle Y$



4. $RSTU$ is a quadrilateral with vertices $R(-3, -3)$, $S(5, 1)$, $T(10, -2)$, and $U(-4, -9)$.

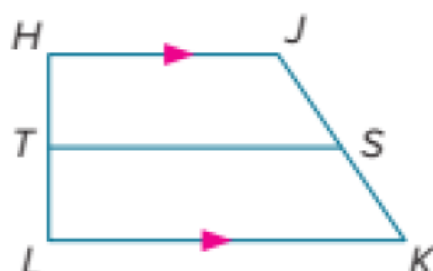
- Verify that $RSTU$ is a trapezoid.
- Is $RSTU$ an isosceles trapezoid? Explain.

5. $ABCD$ is a quadrilateral with vertices $A(-1, 5)$, $B(3, 2)$, $C(-8, 2)$, and $D(-4, 5)$.

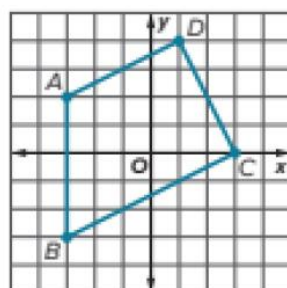
- Verify that $ABCD$ is a trapezoid.
- Is $ABCD$ an isosceles trapezoid? Explain.

\overline{TS} is the midsegment of trapezoid $HJKL$.

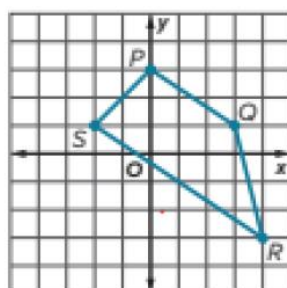
6. If $HJ = 14$ and $LK = 42$, find TS .
7. If $LK = 19$ and $TS = 15$, find HJ .
8. If $HJ = 7$ and $TS = 10$, find LK .
9. If $KL = 17$ and $JH = 9$, find ST .
10. If $TS = 24$ and $LK = 27.4$, find HJ .



11. In trapezoid $ABCD$, $\overline{AD} \parallel \overline{BC}$. Find the endpoints of the midsegment.



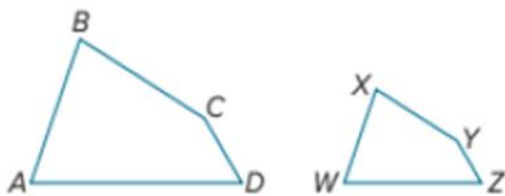
12. In trapezoid $PQRS$, $\overline{PQ} \parallel \overline{SR}$. Find the endpoints of the midsegment.



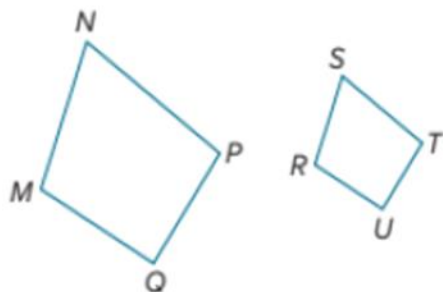
Example 1

List all pairs of congruent angles, and write a proportion that relates the corresponding sides for each pair of similar polygons.

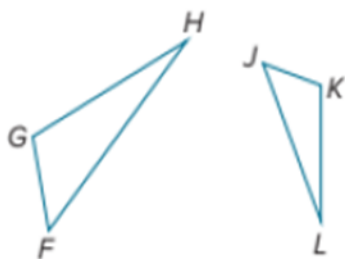
1. $ABCD \sim WXYZ$



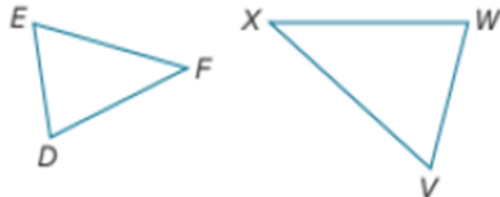
2. $MNPQ \sim RSTU$



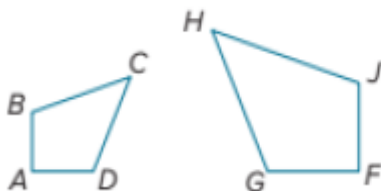
3. $\triangle FGH \sim \triangle JKL$



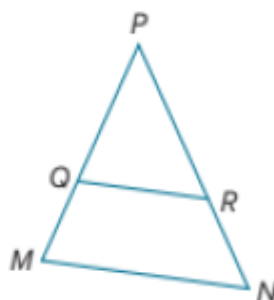
4. $\triangle DEF \sim \triangle VWX$



5. $ABCD \sim FGHI$

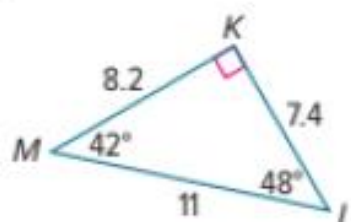
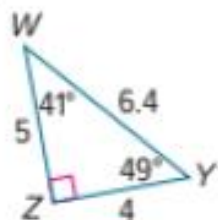


6. $\triangle MNP \sim \triangle QRP$

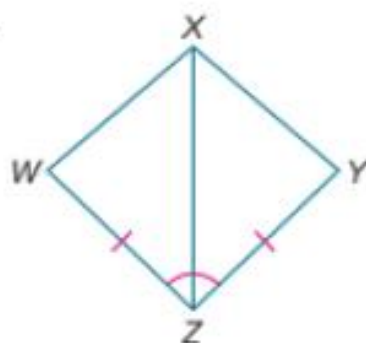


Determine whether each pair of figures is similar. If so, find the scale factor. Explain your reasoning.

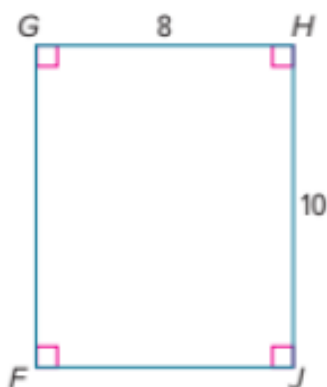
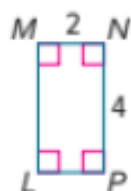
7.



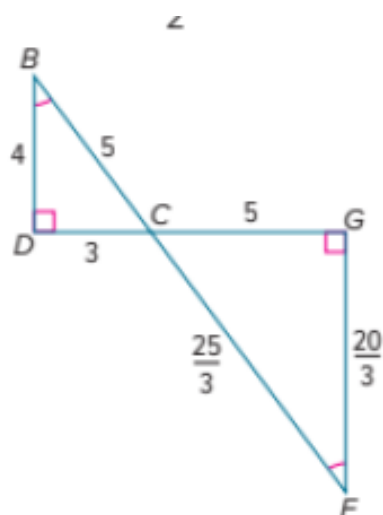
8.



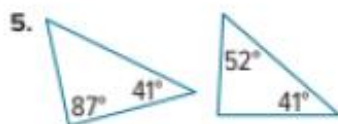
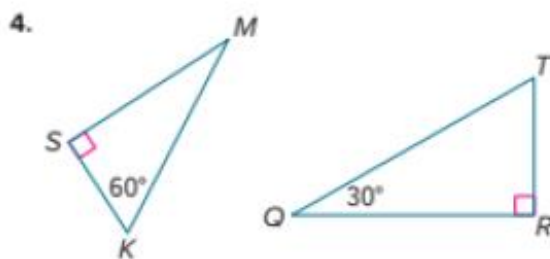
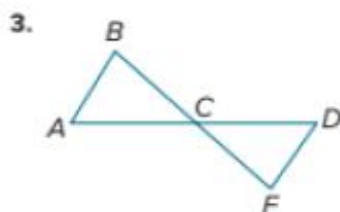
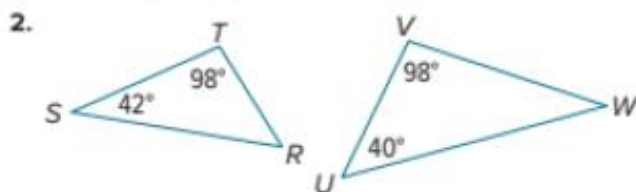
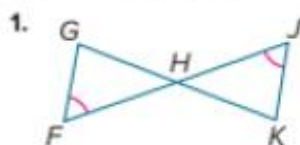
9.



10.

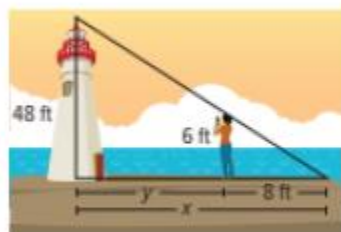


Determine whether each pair of triangles is similar. Explain your reasoning.



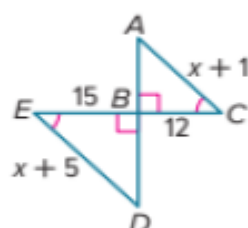
7. **CELL TOWERS** A cell phone tower casts a shadow that is 100 feet long. At the same time, Lia stands near the tower and casts a shadow that is 3 feet 4 inches long. If Lia is 4 feet 6 inches tall, how tall is the cell phone tower?

8. **LIGHTHOUSE** Maya wants to know how far she is standing from a lighthouse. The end of Maya's shadow coincides with the end of the lighthouse's shadow.
- What is the distance from the lighthouse to the end of the lighthouse's shadow, x ?
 - What is the distance from Maya to the lighthouse, y ?

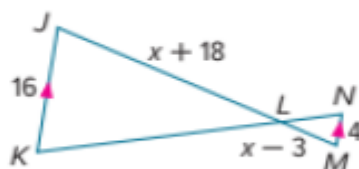


Identify the similar triangles. Then find each measure.

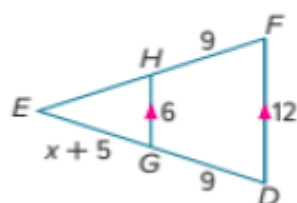
9. AC



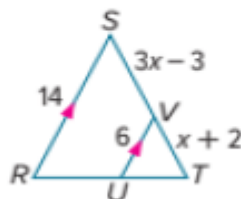
10. JL



11. EH



12. VT



13

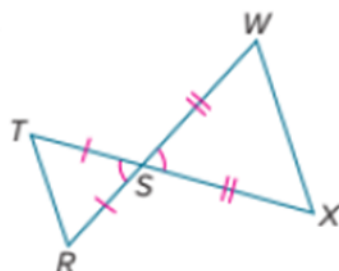
Use the SSS and SAS Similarity criteria to solve problems and prove triangles similar

1 to 11

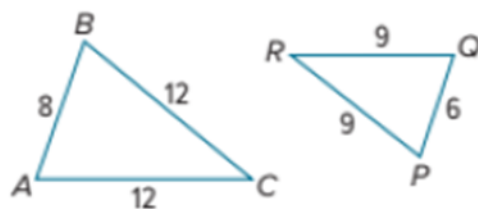
139

Determine whether each pair of triangles is similar. Explain your reasoning.

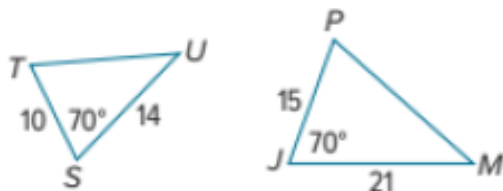
1.



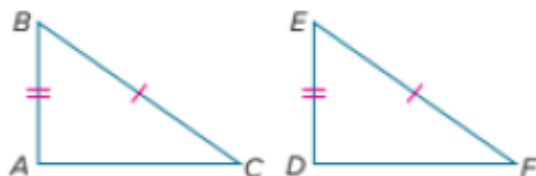
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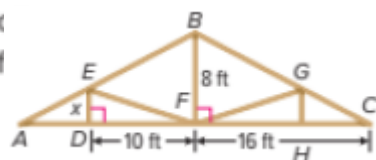
3.



4.



9. **ROOFING** The skeleton of a roof is shown. Find the value of x such that triangles DEF and FBC in the outline of the roof are similar.

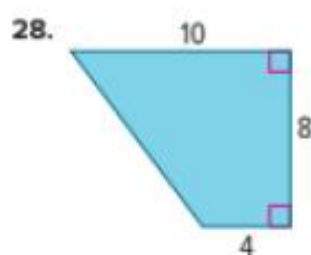
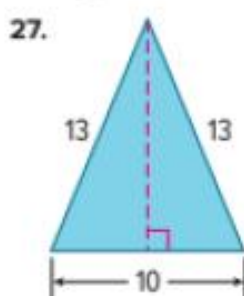
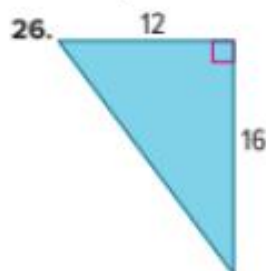


10. **RADIO** A radio tower casts an 8-foot-long shadow at the same time that a vertical yardstick casts a shadow one half inch long. If the triangles formed by the objects and their shadows are similar, how tall is the radio tower?

11. **SAILING** The two sailboats shown are participating in a regatta. If the sails are similar, what is the value of x ?



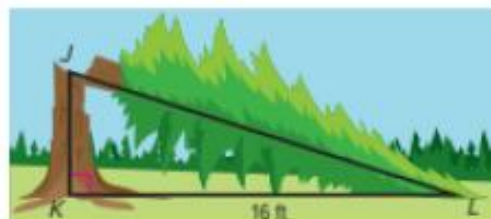
Find the perimeter and area of each figure.



29. The sides of a triangle have measures of x , $x + 5$, and 25. If the measure of the longest side is 25, what value of x makes the triangle a right triangle?

30. **PRECISION** The sides of a triangle have measures of $2x$, 8, and 12. If the measure of the longest side is $2x$, what values of x make the triangle acute?

31. **REASONING** A redwood tree in a national park is 20 meters tall. After it is struck by lightning, the tree breaks and falls over, as shown in the figure. The top of the tree lands at a point 16 feet from the centerline of the tree. A park ranger wants to know the height of the remaining stump of the tree.

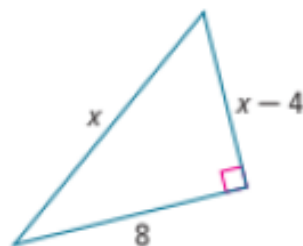


- The ranger lets x represent the height of the stump, \overline{JK} . Explain how the ranger can write an expression for the length of \overline{JL} . Then write an equation that can be used to solve the problem.
- Show how to solve the equation from part a to find the height of the stump.

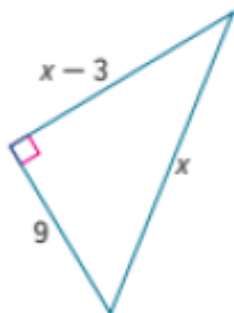
- 32. CONSTRUCT ARGUMENTS** Valeria and Sanjia are staking out a garden that has one pair of opposite sides measuring 30 feet and the other pair of sides measuring 40 feet. Using only a 60-foot-long tape measure, how can they be sure that their garden is a rectangle?
- Draw a model of the garden with diagonal t . Let $p = 30$ and $q = 40$.
 - If the garden is a rectangle, what must be true about p , q , and t ? Why?
 - Sanjia measures the diagonal and finds that it is 50 feet long. Is there enough information to determine whether their garden is a rectangle? Explain.

Find the value of x .

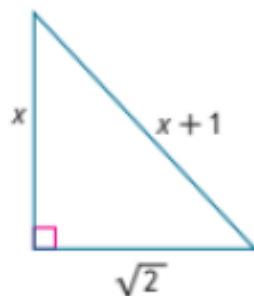
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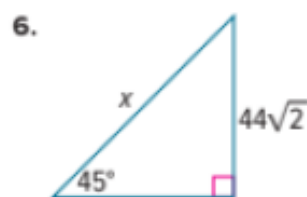
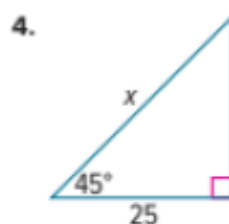
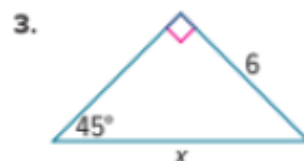
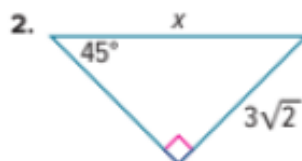
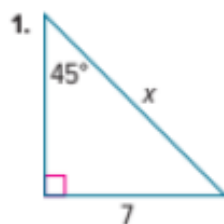
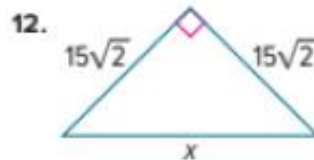
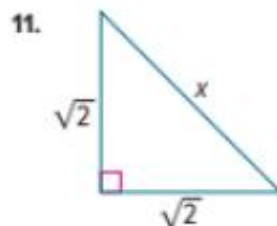
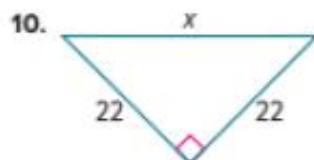
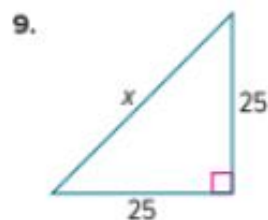
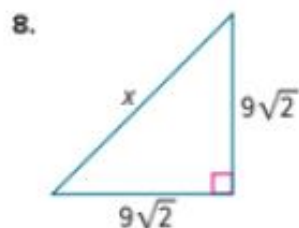
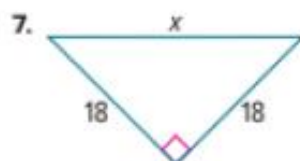
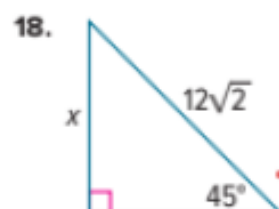
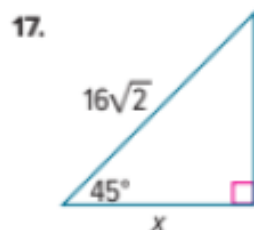
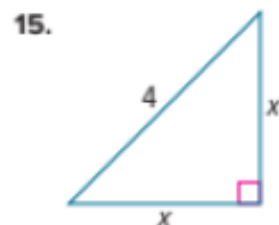
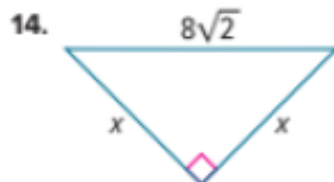
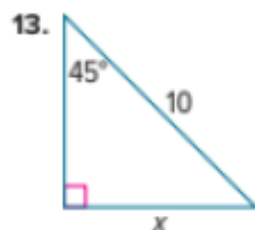


34.

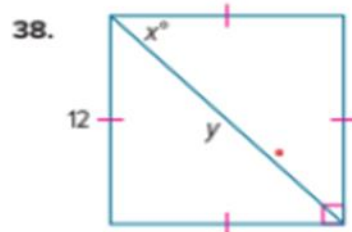
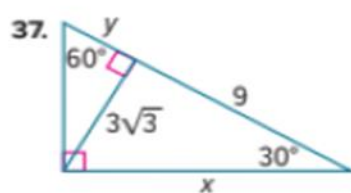
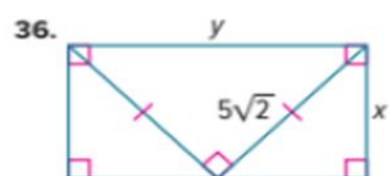
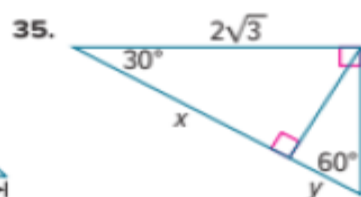
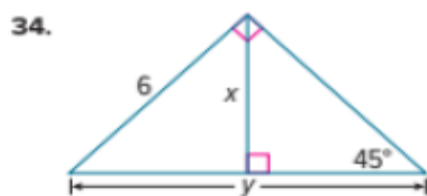
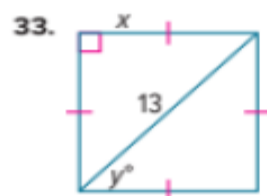


35.



REGULARITY Find the value of x .Find the value of x .Find the value of x .

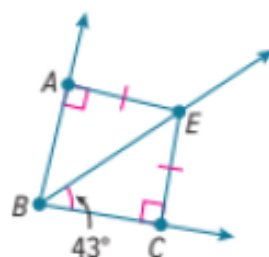
Find the values of x and y .



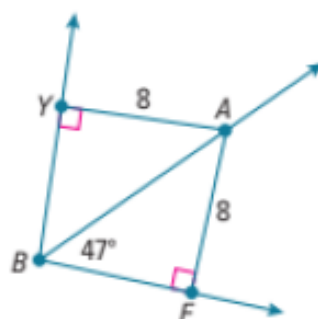
Paper

Find each measure.

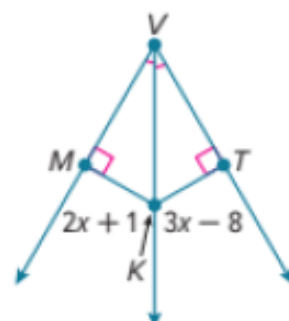
1. $m\angle ABE$



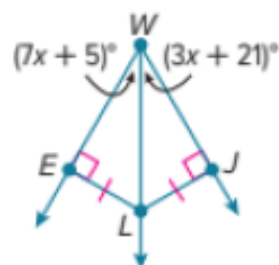
2. $m\angle YBA$



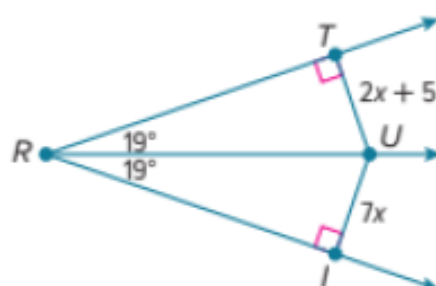
3. MK



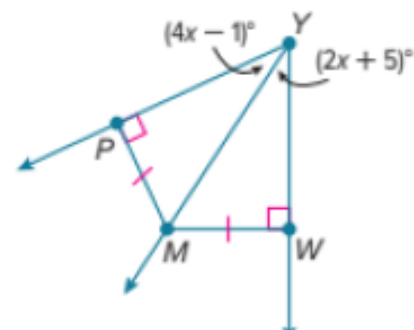
4. $m\angle EWL$



5. IU

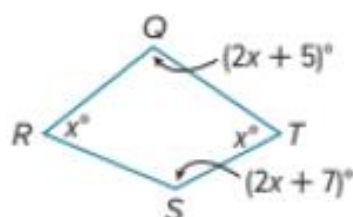


6. $m\angle MYW$

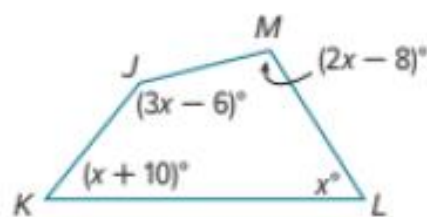


Find the measure of each interior angle.

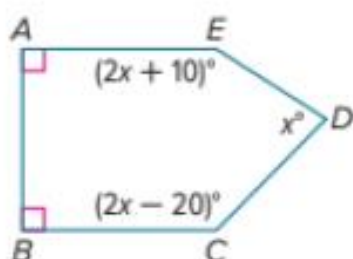
1.



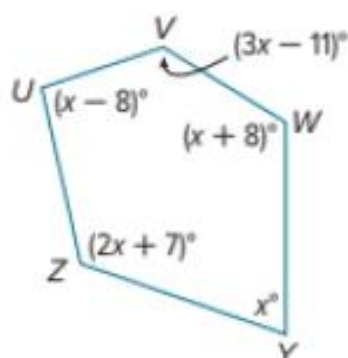
2.



3.



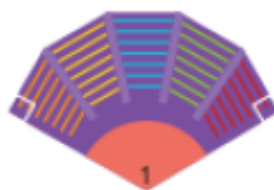
4.



5. **ARCHITECTURE** In the Uffizi gallery in Florence, Italy, there is a room built by Buontalenti called the Tribune (*La Tribuna* in Italian). This room is shaped like a regular octagon. What is the measure of the angle formed by two consecutive walls of the Tribune?

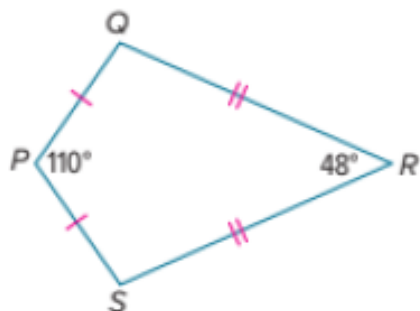


6. **THEATER** A theater floor plan is shown in the figure. The upper five sides are part of a regular dodecagon. Find $m\angle 1$.

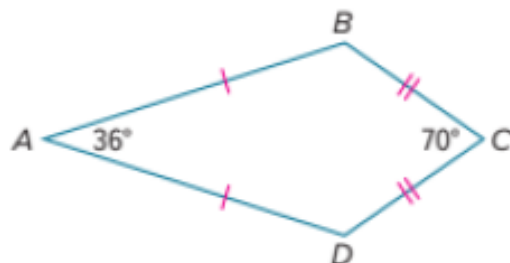


Find each measure in the kites.

13. $m\angle Q$



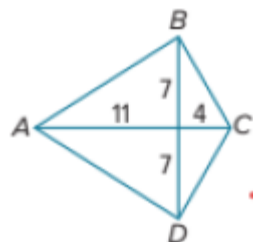
14. $m\angle D$



Example 7

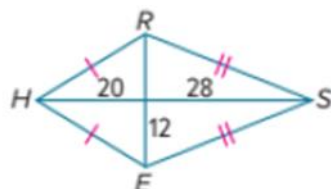
15. **REASONING** Quadrilateral ABCD is a kite.

- Find BC . Write your answer in simplest radical form.
- Find the perimeter of kite ABCD. Round your answer to the nearest tenth, if necessary.



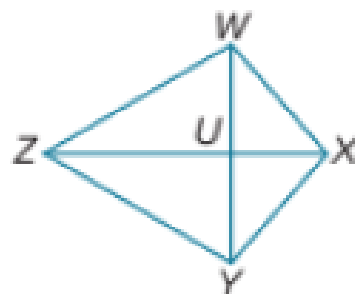
16. **REASONING** Quadrilateral HRSE is a kite.

- Find RH . Write your answer in simplest radical form.
- Find the perimeter of kite HRSE. Round your answer to the nearest tenth, if necessary.

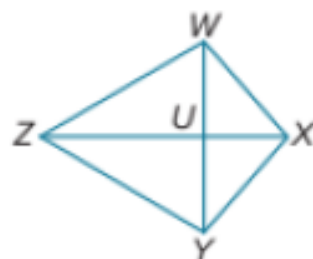


WXYZ is a kite.

19. If $m\angle WXY = 120^\circ$, $m\angle WZY = (4x)^\circ$, and $m\angle ZWX = (10x)^\circ$, find $m\angle ZYX$.



20. If $m\angle WXY = (13x + 24)^\circ$, $m\angle WZY = 35^\circ$, and $m\angle ZYX = (13x + 14)^\circ$, find $m\angle ZWX$.

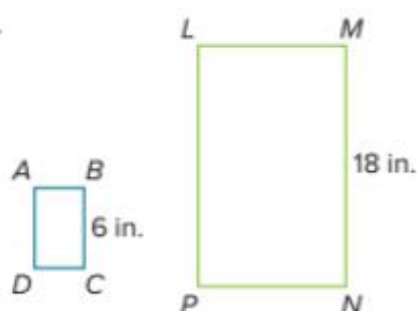


19	Use scale factors to calculate the dimensions of dilated images	1 to 18	119, 120
	Represent dilations as functions and find the scale factors of dilations		

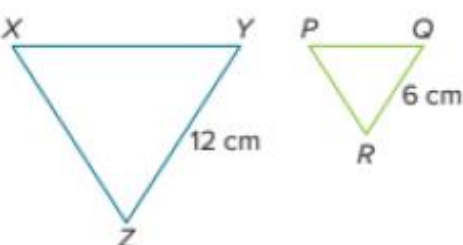
Lesson 10: Dilations

Determine whether the dilation from the figure on the left to the figure on the right is an *enlargement* or a *reduction*. Then find the scale factor of the dilation.

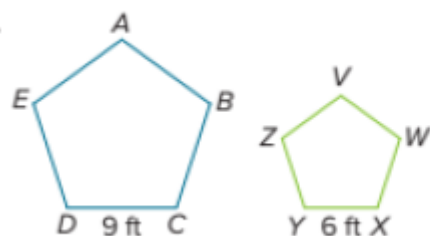
1.



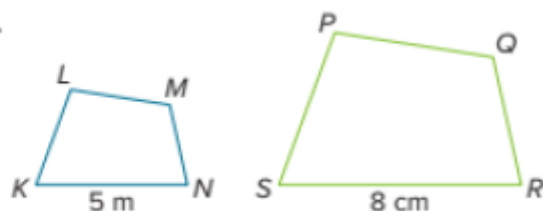
2.



3.

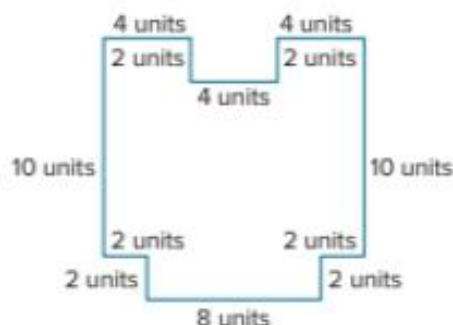


4.



Example 2

5. **BLUEPRINTS** Ezra is redrawing the blueprint shown of a stage he is planning to build for his band. By what percentage should he multiply the dimensions of the stage so that the dimensions of the image are $\frac{1}{2}$ the size of the original blueprint? What will be the perimeter of the updated blueprint?



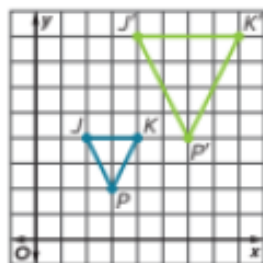
Example 3

For each set of triangle vertices, find and graph the coordinates of the vertices of the image after a dilation of the triangle by the given scale factor.

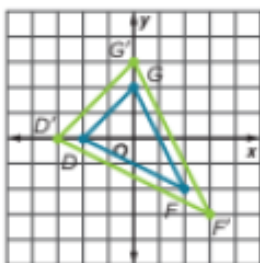
6. $J(-8, 0)$, $K(-4, 4)$, $L(-2, 0)$, $k = 0.5$ 7. $S(0, 0)$, $T(-4, 0)$, $V(-8, -8)$, $k = 1.25$
8. $A(9, 9)$, $B(3, 3)$, $C(6, 0)$, $k = \frac{1}{3}$ 9. $D(4, 4)$, $F(0, 0)$, $G(8, 0)$, $k = 0.75$

Find the scale factor of the dilation.

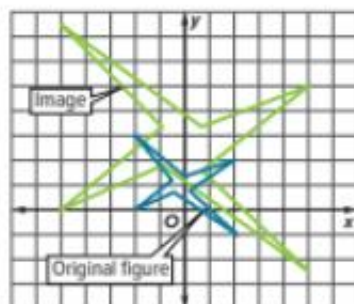
10. $\triangle J'K'P'$ is the image of $\triangle JKP$.



11. $\triangle D'F'G'$ is the image of $\triangle DFG$.

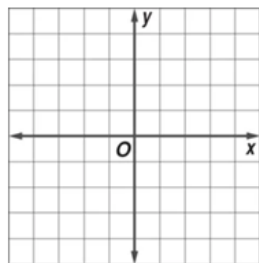
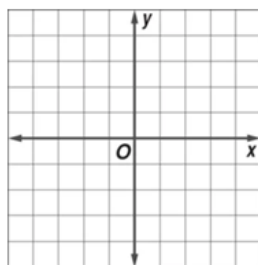


12. Tyrone drew a logo and a dilation of the same logo on the coordinate plane. What is the scale factor of the dilation?



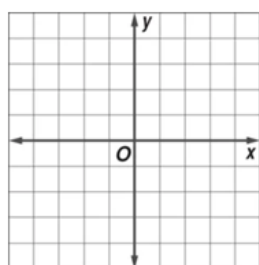
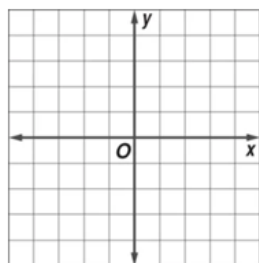
Graph the image of each polygon with the given vertices after a dilation centered at the origin with the given scale factor.

13. $F(-10, 4)$, $G(-4, 4)$, $H(-4, -8)$, $k = 0.25$ 14. $X(2, -1)$, $Y(-6, 4)$, $Z(-2, -5)$, $k = \frac{5}{4}$



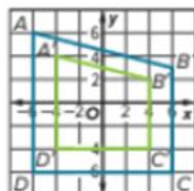
15. $M(4, 6)$, $N(-6, 2)$, $P(0, -8)$, $k = \frac{3}{4}$

16. $R(-2, 6)$, $S(0, -1)$, $T(-5, 3)$, $k = 1.5$

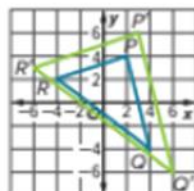


Find the scale factor of the dilation.

17. $A'B'C'D'$ is the image of $ABCD$.



18. $\triangle P'Q'R'$ is the image of $\triangle PQR$.



Determine whether the points X , Y , and Z can be the vertices of a triangle. If so, classify the triangle as *acute*, *right*, or *obtuse*. Justify your answer.

15. $X(-3, -2)$, $Y(-1, 0)$, $Z(0, -1)$

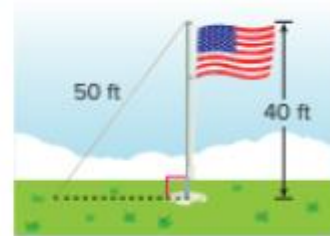
16. $X(-7, -3)$, $Y(-2, -5)$, $Z(-4, -1)$

17. $X(1, 2)$, $Y(4, 6)$, $Z(6, 6)$

18. $X(3, 1)$, $Y(3, 7)$, $Z(11, 1)$

Mixed Exercises

19. **TETHERS** To help support a flag pole, a 50-foot-long tether is tied to the pole at a point 40 feet above the ground. The tether is pulled taut and tied to an anchor in the ground. How far away from the base of the pole is the anchor?



Determine whether each set of measures can be the measures of the sides of a triangle. If so, classify the triangle as *acute*, *obtuse*, or *right*. Justify your answer.

20. $\sqrt{5}$, $\sqrt{12}$, $\sqrt{13}$

21. 2, $\sqrt{8}$, $\sqrt{12}$

22. 9, 40, 41