

September 10, 2018

What are the scale factors for the following figures??

$(2, 3) \times (2) = (4, 6)$
 How do you know? $(-2, 4) \times \frac{1}{2} = (-1, 2)$

scale factor

Sep 6-9:58 AM

Triangle Midsegment Theorem

p 341 Read and copy the Triangle Midsegment Theorem

Draw a picture of what you think the Triangle Midsegment is describing...

D, E are midpoints
 DE is the midsegment
 $DE = \frac{1}{2} BC$
 $2DE = BC$

Sep 6-9:59 AM

p342

Your Turn

6. Find JL, PM, and $m\angle MLK$.

$JL = 2(39) = 78$
 $PM = \frac{1}{2}(95) = 47.5$
 $\angle MLK = 105^\circ$

Elaborate

7. Discussion Explain why \overline{XY} is NOT a midsegment of the triangle.

X, Y were not the midpoints!

8. Essential Question Check-In Explain how the perimeter of $\triangle DEF$ compares to that of $\triangle ABC$.

The perimeter of $\triangle DEF$ is $\frac{1}{2}$ the perimeter of $\triangle ABC$
 The perimeter of $\triangle ABC$ is 2 times the perimeter of $\triangle DEF$

Sep 6-10:03 AM

p343

find each measure.

5 minutes!

6. $XY = \frac{1}{2}(45.8) = 22.9$
 7. $BZ = \frac{1}{2} BC = \frac{1}{2}(15.8) = 7.9$
 8. $AX = 4.6$
 9. $m\angle YZC = 68^\circ$
 10. $m\angle BXY = X \pm 68 = 180$ $X = 112$
 Algebra Find the value of each variable.

11. $2(6n) = 48$ $12n = 48$ $n = 4$
 $2(11.5) = n + 4.2$ $22.6 = n + 4.2$ $-4.2 = -4.2$ $18.4 = n$ $n = 18.4$
 $2(4n + 9) = 14n$ $8n + 18 = 14n$ $-8n = -8n$ $18 = 6n$ $3 = n$

Sep 6-10:05 AM

p 344

15. Line segment \overline{XY} is a midsegment of $\triangle MNP$. Determine whether each of the following statements is true or false.

3 are T
 3 are F

a. $MP = 2XY$ T
 b. $MP = \frac{1}{2} XY$ F
 c. $MX = XN$ T
 d. $MX = \frac{1}{2} NX$ F
 e. $NX = \frac{1}{2} YN$ F
 f. $XY = \frac{1}{2} MP$ T

Sep 6-10:05 AM

Triangle Midsegment

In each triangle, M, N, and P are the midpoints of the sides. Name a segment parallel to the one given.

1) $JK \parallel \overline{XN}$
 2) $MN \parallel \overline{EG}$
 3) $CD \parallel \overline{MP}$
 $DN \parallel \overline{NC}$
 $CN \parallel \overline{NC}$
 Find the missing length indicated.
 5) Find FC $\frac{1}{2}(22) = 11$
 6) Find FR $2(2) = 4$
 7) Find EX 6
 8) Find FR 10

Sep 6-10:10 AM

Solve for x.

9) $x+12 = 2(2x-9)$

10) $2x-9 = x+16$

11) $x+3 = 2(2x-9)$

12) $x+16 = 2x-12$

Find the missing length indicated.

13) Find PR $x+30 = 2(x+20)$

14) Find AC $2x-12 = 2x-16$

15) Find RS $14+x = 2(2x+16)$

16) Find PR $2x+6 = 2x-5$

Sep 6-10:11 AM

September 11, 2018

Find y.

Find x and the length of AB.

Sep 6-10:07 AM

Parallelogram vocabulary

Define the following words and draw a picture

- quadrilateral
- parallelogram
- diagonal

Sep 6-10:08 AM

Properties of parallelograms

One special kind of polygons is called a parallelogram. It is a quadrilateral where both pairs of opposite sides are parallel.

There are six important properties of parallelograms to know:

1. Opposite sides are congruent ($AB = DC$), ($AD = BC$)
2. Opposite angles are congruent ($D = B$), ($A = C$)
3. Consecutive angles are supplementary ($A + D = 180^\circ$), ($A + B = 180^\circ$)
4. If one angle is right, then all angles are right.
5. The diagonals of a parallelogram bisect each other.
6. Each diagonal of a parallelogram separates it into two congruent triangles. $\triangle BEC \cong \triangle DEA$, $\triangle AEO \cong \triangle CEO$

Sep 6-10:12 AM

p 363 copy theorems
p 364 copy theorem

p368 10-13

A staircase handrail is made from congruent parallelograms. In $\square PQRS$, $PQ = 17.5$, $ST = 18$, and $m\angle QRS = 110^\circ$. Find each measure. Explain.

10. $RS = 17.5$

11. $QT = 18$

12. $m\angle PQR$ $\angle R + \angle Q = 180$
 $110 + \angle Q = 180$
 $\angle Q = 70$

13. $m\angle SPQ$ $\angle Q + \angle P = 180$
 $70 + \angle P = 180$
 $\angle P = 110$

Sep 6-10:14 AM

p 371 copy theorem
p 372 copy theorems
p 373 copy theorem

n 378

Show that each quadrilateral is a parallelogram for the given values of the variables.

5. $x = 4$ and $y = 9$ $u = 8$ and $v = 3.5$

Yes, opposite sides are congruent. $SD = 27$, $LB = 13$, $GS = 7$

Determine if each quadrilateral must be a parallelogram. Justify your answer.

7. Yes, parallel symbol \rightarrow equal

8. No, equal sides

9. No, equal sides

10. No, parallel symbol

11. Yes, opposite angles are $107 + 73 = 180$, $73 + 107 = 180$

12. Yes, opposite angles are $123 + 57 = 180$, $57 + 123 = 180$

Sep 6-10:16 AM

Parallelograms

Solve for x . Each figure is a parallelogram.

opposite \angle are congruent.

1) $135 = 46x - 3$
 $138 = 46x$
 $3 = x$

2) $9 = 16x$
 $17x = 3$
 $x = 6$

3) $13 = 4x - 3$
 $16 = 4x$
 $4 = x$

4) $85 + 32x - 1 = 180$
 $84 + 32x = 181$
 $32x = 97$
 $x = 3$

5) $3x - 3 = x + 3$
 $2x = 6$
 $x = 3$

6) $13 = x + 4$
 $9 = x$

7) $2x = x + 11$
 $x = 11$

8) $3x - 3 = x + 3$
 $2x = 6$
 $x = 3$

9) $3x + 1 = 3 + 2x$
 $x = 2$

10) $40 = 9x - 5$
 $45 = 9x$
 $5 = x$

TRY 3 more

Sep 6-10:19 AM

Find the measurement indicated in each parallelogram.

13) Find CD
 $x + 6 = 2x - 5$
 $-x = -11$
 $x = 11$
 $CD = 2(11) - 5 = 17$

14) Find $m\angle D$
 $13 + 13x = 118$
 $130x = 105$
 $x = 1$
 $m\angle D = 13 + 13(1) = 26$

15) Find RS
 $LB = 50$
 $GB = 14$
 $JP = 14$
 $2x + 14 = 14$
 $2x = 0$
 $x = 0$

16) Find $m\angle X$
 $JS = 67$
 $SB = 67$
 $IM = 67$
 $SD = 67$
 $x + 67 = 67$
 $x = 0$

Sep 6-10:19 AM

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14) Find $m\angle D$

$13 + 15x = -1 + 9x$
 $14 = -6x$
 $x = -2.33$

$-1 + 9x + 13 + 15x = 180$
 $12 + 24x = 180$
 $24x = 168$
 $x = 7$
 $m\angle D = 13 + 15(7) = 118$

Sep 11-11:45 AM

Objectives

Prove certain triangles are similar by using AA, SSS, and SAS.

Use triangle similarity to solve problems.

Postulate 7-3-4 Angle-Angle (AA) Similarity

POSTULATE	HYPOTHESIS	CONCLUSION
If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Sep 12-7:56 AM

Theorem 7-3-2 Side-Side-Side (SSS) Similarity

THEOREM	HYPOTHESIS	CONCLUSION
If the three sides of one triangle are proportional to the three corresponding sides of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Theorem 7-3-3 Side-Angle-Side (SAS) Similarity

THEOREM	HYPOTHESIS	CONCLUSION
If two sides of one triangle are proportional to two sides of another triangle and their included angles are congruent, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Sep 12-7:57 AM

Are the triangles similar by AA, SAS or SSS?

Verify that the triangles are similar.

$\triangle PQR$ and $\triangle STU$ same, YES

$\frac{PQ}{ST} = \frac{3}{4.5} = \frac{2}{3} = .67$
 $\frac{QR}{TU} = \frac{3}{4.5} = \frac{2}{3} = .67$
 $\frac{PR}{SU} = \frac{2}{3} = .67$

Therefore $\triangle PQR \sim \triangle STU$ by SSS.

Example 1: Using the AA Similarity Postulate

Explain why the triangles are similar and write a similarity statement.

$\triangle ABC \sim \triangle DEC$

vertical angles = equal.

Verify that the triangles are similar.

$\triangle DEF$ and $\triangle HJK$

$\angle D \cong \angle H$ by the Definition of Congruent Angles.

$\frac{DE}{HJ} = \frac{2}{1} = 2$ $\frac{DF}{HK} = \frac{5.8}{2.9} = 2$ $70^\circ = 70^\circ$

Therefore $\triangle DEF \sim \triangle HJK$ by SAS.

Sep 12-7:59 AM

AA, SAS, or SSS similarity & how do you know?

AA vertical angles

SAS

SSS

AA

$12 = 15 = 16$
 $20 = 25 = 20$

$5.8 = 2.9 = 70$
 $11.6 = 5.8 = 140$

43°
 90°
 47°

$180 - 90 - 47 = 43$

Sep 12-8:01 AM

Geometry Name: _____ ID: 1

Triangle Similarity: AA, SAS, SSS using proportions Date: _____ Period: _____

Find the missing length indicated. Leave your answer in simplest radical form.

1) $x^2 = 3600$
 $x = 60$

2) $16^2 + 25^2 = 25^2$

3) $9^2 + 16^2 = 16^2$

4) $12^2 + 25^2 = 25^2$

5) $48^2 + 80^2 = 80^2$

6) $12^2 + 25^2 = 25^2$

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

7) $\triangle PQR \sim \triangle STU$

8) $\triangle MNL \sim \triangle PQR$

Sep 12-7:53 AM

9) $\triangle ABCD \sim \triangle EFGH$

10) $\triangle KLM \sim \triangle NPO$

Solve for x. The triangles in each pair are similar.

11) $\triangle DEF \sim \triangle GHI$

12) $\triangle JKL \sim \triangle MNO$

Find the missing length. The triangles in each pair are similar.

13) $\triangle LMN \sim \triangle PQR$

14) $\triangle RST \sim \triangle UVW$

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State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

1) $\triangle SDC \sim \triangle TUV$

2) $\triangle KLM \sim \triangle KEF$

3) $\triangle ABC \sim \triangle DEF$

4) $\triangle UTS$ not similar

Sep 12-10:38 AM

Unit 2 - Dilations & Similarity Study Guide

1) A dilation is a transformation that results in similar figures. Therefore, the corresponding parts of both shapes share these properties (except which one)?

2) Dilate the polygon by a scale factor of 1.5 about the origin and list the post-image points as decimals.

3) Dilate the triangle by a scale factor of 1/2 about the origin and list the post-image points as decimals.

In the figure on the right, determine the following information:

3) Scale Factor: $\frac{3}{1} = 3$

Point: $A' = \frac{1}{2}A$, $b' = \frac{1}{2}b$

Triangle Similarity Theorem

6) $\triangle ABC \sim \triangle DEF$ by AA

7) $\triangle GHI \sim \triangle JKL$ by SAS

Sep 13-10:05 AM

8) $\triangle ABC \sim \triangle DEF$ by SSS

9) $\triangle GHI \sim \triangle JKL$ by SAS

10) Find x

11) In $\triangle ABC$, $\angle C = 90^\circ$, $AC = 12$, $BC = 16$, and $AB = 20$. Find the perimeter of each triangle below.

12) In the diagram on the right, a man looks down at a mirror from an eye level of 6 ft. His eye is 5 ft from the mirror's center which is 10 ft from a vertical line drawn from the top of the signal to the ground. How tall is the signal?

Application of Similarity: Solve each word problem to two decimals.

13) In the diagram on the right, a man looks down at a mirror from an eye level of 6 ft. His eye is 5 ft from the mirror's center which is 10 ft from a vertical line drawn from the top of the signal to the ground. How tall is the signal?

Sep 13-10:05 AM

September 14, 2018

1) What is the scale factor (black triangle = pre-image, red triangle = image)

Scale factor: 5

Find the missing length indicated.

2) Find BD .

Midsegment theorem: $2(2x-8) = 3x-6$
 $4x-16 = 3x-6$
 $4x-3x = -6+16$
 $x = 10$
 $BD = 3x-6 = 3(10)-6 = 24$

3-4) State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

AA
SAS
SSS

3) $\triangle TVU \sim \triangle TBC$

Scale factor: 1/2

1) criterion of \sim :
2) 24

3) similar; AA similarity; not similar

4) $\frac{12}{19} = \frac{63}{27} = \frac{18}{27} = \frac{6}{9}$

Sep 13-11:27 AM

p 384 property of rectangles
p 385 property of rhombuses

p 388

Find the lengths using rectangle $ABCD$.

2. $AB = 21$; $AD = 28$. What is the value of $AC + BD$?

3. $BC = 40$; $CD = 30$. What is the value of $BD - AC$?

4. An artist connects stained glass pieces with lead strips. In this rectangular window, the strips are cut so that $FH = 34$ in. Find JG . Explain.

Sep 6-10:21 AM

The rectangular gate has diagonal braces. Find each length.

5. Find HJ .

6. Find HK .

7. Find the measure of each numbered angle in the rectangle.

Sep 6-10:27 AM

p 395 theorem
p 396 theorems

p399-400

Determine whether each quadrilateral must be a rectangle. Explain.

3.

4.

Sep 6-10:28 AM

p 400

Each quadrilateral is a parallelogram. Determine whether each parallelogram is a rhombus or not.

5.

6.

Give one characteristic about each figure that would make the conclusion valid.

7. Conclusion: $JKLM$ is a rhombus.

8. Conclusion: $PQRS$ is a square.

Sep 6-10:30 AM

p 401

In Exercises 13-16, Determine which quadrilaterals match the figure: parallelogram, rhombus, rectangle, or square? List all that apply.

13. Given: $\overline{XY} \cong \overline{ZW}$, $\overline{XY} \parallel \overline{ZW}$, $\overline{WY} \cong \overline{XZ}$, $\overline{WY} \perp \overline{XZ}$.

14. Given: $\overline{XY} \cong \overline{ZW}$, $\overline{XW} \cong \overline{YZ}$, $\overline{WY} \cong \overline{XZ}$.

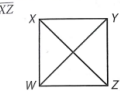
15. Given: $\angle WXY \cong \angle YZW$, $\angle XWZ \cong \angle ZYX$, $\angle XWY \cong \angle YWZ$, $\angle XYW \cong \angle ZYW$.

16. Given: $m\angle WXY = 130^\circ$, $m\angle XWZ = 50^\circ$, $m\angle WZY = 130^\circ$.

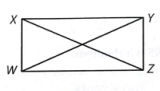
Sep 6-10:31 AM

In Exercises 13–16, Determine which quadrilaterals match the figure: parallelogram, rhombus, rectangle, or square? List all that apply.

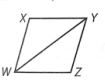
13. Given: $\overline{XY} \cong \overline{ZW}$, $\overline{XY} \parallel \overline{ZW}$, $\overline{WY} \cong \overline{XZ}$, $\overline{WY} \perp \overline{XZ}$



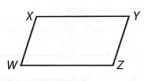
14. Given: $\overline{XY} \cong \overline{ZW}$, $\overline{XW} \cong \overline{ZY}$, $\overline{WY} \cong \overline{XZ}$



15. Given: $\angle WXY \cong \angle YZW$, $\angle XWZ \cong \angle ZYX$, $\angle XWY \cong \angle YWZ$, $\angle XYW \cong \angle ZYW$



16. Given: $m\angle WXY = 130^\circ$, $m\angle XWZ = 50^\circ$, $m\angle WZY = 130^\circ$



Sep 6-10:31 AM

Quadrilateral G.O.

Quadrilaterals – Properties Chart

Complete the properties chart for each quadrilateral. Tell how many and which angles or sides fit each description. Tell the characteristics of the diagonals for each quadrilateral.

Figure	Congruent Angles	Congruent Sides	Parallel Sides	Diagonals
Parallelogram				
Rectangle				
Rhombus				
Square				
Trapezoid				
Isosceles Trapezoid				
Kite				

Sep 6-10:32 AM

Quadrilaterals – Flow Chart

Complete the flow chart with the name of the appropriate quadrilateral. Include a diagram to represent each quadrilateral.

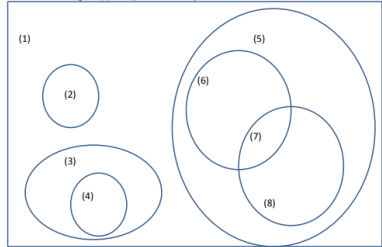
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    graph TD
      A[Quadrilateral ABCD] --> B[If 2 pair opposite sides are parallel, ABCD is a (1)]
      A --> C[If 1 pair opposite sides are parallel, ABCD is a (2)]
      A --> D[If no opposite sides are parallel, ABCD is a (3)]
      B --> E[If diagonals are congruent, ABCD is a (4)]
      B --> F[If diagonals are perpendicular, ABCD is a (5)]
      C --> G[If diagonals are congruent, ABCD is a (6)]
      D --> H[If two pair consecutive sides are congruent, ABCD is a (7)]
      E --> I[If diagonals are both = and ⊥, ABCD is a (8)]
  
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Sep 6-10:34 AM

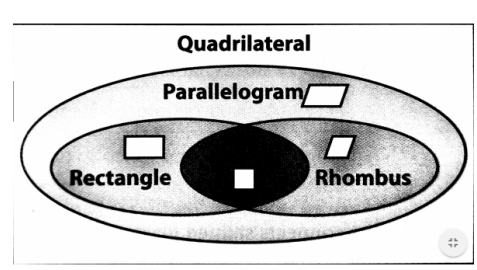
Quadrilaterals – Venn Diagram

Complete the Venn diagram with the name of the appropriate quadrilateral. Include a diagram(s) to represent each quadrilateral.



Sep 6-10:34 AM

Let's discuss this...



Sep 6-10:40 AM

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Sep 6-10:34 AM

p 404 Four Kite Theorem
 p 405 Thee Isosceles Trapezoid Theorems
 p 408 Trapezoid midsegment Theorem

Sep 6-10:35 AM

p 410

Evaluate: Homework and Practice

In kite $ABCD$, $m\angle BAE = 28^\circ$ and $m\angle BCE = 57^\circ$. Find each measure.

- $m\angle ABE$
- $m\angle CBE$
- $m\angle ABC$
- $m\angle ADC$

Sep 6-10:44 AM

p 412-413

Use the isosceles trapezoid to find each measure or value.

7. $LJ = 19.3$ and $KN = 8.1$. Determine MN .

8. Find the positive value of x so that trapezoid PQRS is isosceles.

9. In isosceles trapezoid EFGH, use the Same-Side Interior Angles Postulate to determine $m\angle E$.

10. $AC = 3y + 12$ and $BD = 27 - 2y$. Determine the value of y so that trapezoid ABCD is isosceles.

Sep 6-10:44 AM

Find the unknown segment lengths in each trapezoid.

11. In trapezoid ABCD, find XY .

12. In trapezoid EFGH, find FG .

Sep 6-10:45 AM

13. In trapezoid PQRS, $PQ = 4RS$. Determine XY .

14. In trapezoid JKLM, $PQ = 2JK$. Determine LM .

Algebra Find the length of the midsegment of each trapezoid.

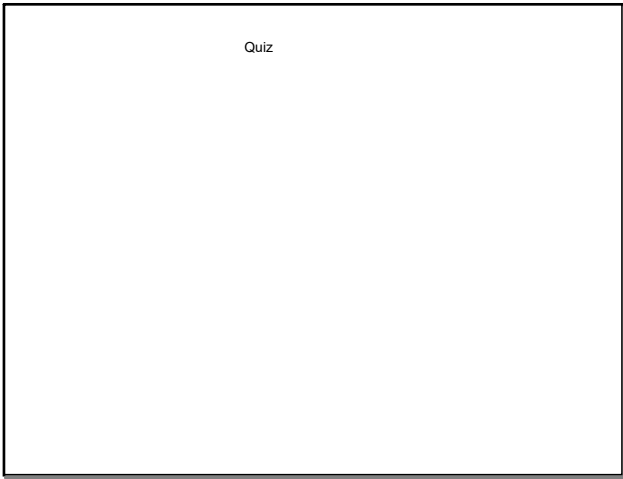
18.

19.

Sep 6-10:45 AM

Study Guide

Sep 6-11:05 AM



Sep 6-12:47 PM