LESSON MAKER PRO

Angle Match Mission

Use angle sums and matching vertices in similar figures.

GRADE 7 · 7.MG.2.g

7.MG.2.g "Given angle measures in a quadrilateral or triangle, determine unknown angle measures in a similar quadrilateral or triangle."

NAME _____ DATE _____

MATCH THE ANGLES

Similar triangles and quadrilaterals have equal angles at matching vertices. Use the order of the letters to find matching vertices. Triangle angles total 180 degrees, and quadrilateral angles total 360 degrees.

WORKED EXAMPLE

Triangle ABC is similar to triangle DEF. Angle A = 52 degrees and angle B = 71 degrees. Find angle F.

1. Triangle ABC has 180 degrees total.
2. angle C = 180 - 52 - 71 = 57 degrees.
3. Angle C matches angle F, so angle F = 57 degrees.

Answer: 57 degrees

PRACTICE 6 problems

1 Triangle ABC is similar to triangle JKL. Angle A = 38 degrees and angle B = 64 degrees. Find angle L.

ANSWER _____

2 Triangle MNO is similar to triangle RST. Angle M = 45 degrees and angle N = 67 degrees. Find angle T.

ANSWER _____

3 Quadrilateral PQRS is similar to quadrilateral WXYZ. Angle P = 83 degrees, angle Q = 96 degrees, and angle R = 101 degrees. Find angle Z.

ANSWER _____

4 Quadrilateral ABCD is similar to quadrilateral EFGH. Angle A = 72 degrees, angle B = 88 degrees, and angle C = 109 degrees. Find angle H.

ANSWER _____

5 Triangle GHI is similar to triangle PQR. Angle H = 4x + 5 degrees and angle Q = 77 degrees. Find x.

ANSWER _____

6 Triangle UVW is similar to triangle KLM. Angle U = 49 degrees, angle V = 62 degrees, and angle M = x + 20 degrees. Find x.

ANSWER _____

APPLY IT Show your work

1 At a robotics club, a small triangular team logo, triangle ABC, is similar to a larger logo, triangle DEF. Angle A is 34 degrees and angle B is 79 degrees. What is the measure of angle F on the larger logo?

WORK SPACE

ANSWER _____

2 A game designer uses a quadrilateral screen icon ABCD and a similar larger icon EFGH. The smaller icon has angle A = 65 degrees, angle B = 92 degrees, and angle C = 104 degrees. What is the measure of angle H on the larger icon?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Quadrilateral ABCD is similar to quadrilateral EFGH. Angle A = 4x + 9 degrees, angle B = 86 degrees, angle C = 97 degrees, and angle E = 73 degrees. Find x and the measure of angle H.

WORK SPACE AND ANSWER

ANSWER KEY

Angle Match Mission

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Triangle ABC is similar to triangle JKL. Angle A = 38 degrees and angle B = 64 degrees. Find angle L.	**78 degrees**
2	Triangle MNO is similar to triangle RST. Angle M = 45 degrees and angle N = 67 degrees. Find angle T.	**68 degrees**
3	Quadrilateral PQRS is similar to quadrilateral WXYZ. Angle P = 83 degrees, angle Q = 96 degrees, and angle R = 101 degrees. Find angle Z.	**80 degrees**
4	Quadrilateral ABCD is similar to quadrilateral EFGH. Angle A = 72 degrees, angle B = 88 degrees, and angle C = 109 degrees. Find angle H.	**91 degrees**
5	Triangle GHI is similar to triangle PQR. Angle H = 4x + 5 degrees and angle Q = 77 degrees. Find x.	**x = 18**
6	Triangle UVW is similar to triangle KLM. Angle U = 49 degrees, angle V = 62 degrees, and angle M = x + 20 degrees. Find x.	**x = 49**

PART 2 · APPLY IT

1. **67 degrees** Find angle C by subtracting 34 degrees and 79 degrees from the triangle angle total. Angle C matches angle F.
2. **99 degrees** Find angle D by subtracting the three known angles from the quadrilateral angle total. Angle D matches angle H.

CHALLENGE

x = 16; angle H = 104 degrees

Accept answers written with degree symbols or the word degrees. For expression items, accept the stated value of x; for the challenge, both x = 16 and angle H = 104 degrees are required.