LESSON MAKER PRO

Angle Connections

Use parallel lines and triangle angles to find missing measures.

GRADE 7 · 7A.GM.B.38

7A.GM.B.38 "Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures. a. Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees."

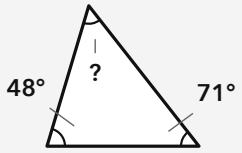
NAME _____ DATE _____

THE BIG IDEA

Draw a line through a triangle's top vertex parallel to its base. The two base angles match angles along that line. Those angles and the top angle make a straight angle, so a triangle's interior angles add to 180°.

WORKED EXAMPLE

Find the angle marked ?.

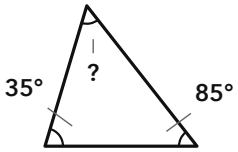


1. Add the known angles: 48° + 71° = 119°.
2. Subtract from 180°: 180° - 119° = 61°.

Answer: 61°

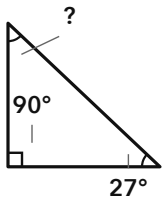
PRACTICE 6 problems

1 Find the angle marked ?.



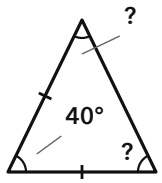
ANSWER _____

2 Find the angle marked ?.



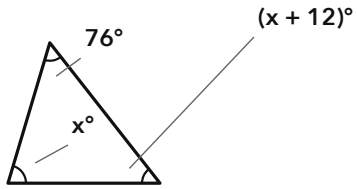
ANSWER _____

3 Find both angles marked ?.



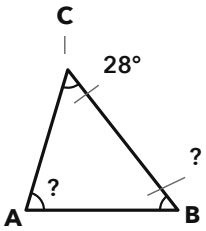
ANSWER _____

4 Find x.



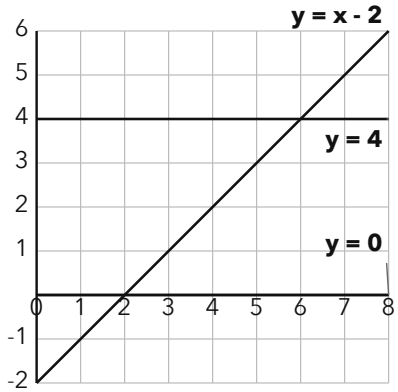
ANSWER _____

5 Angle A is 3 times angle B. Find both angles.



ANSWER _____

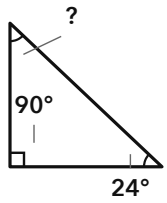
6 At the lower crossing, an acute angle measures 45°. What is the obtuse angle at the upper crossing?



ANSWER _____

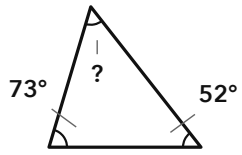
APPLY IT Show your work

1 A skate park designer sketches a triangular ramp support. Find the angle marked ?.



ANSWER _____

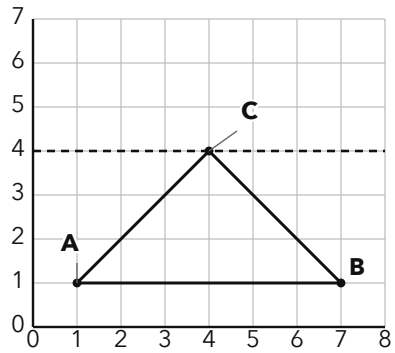
2 A soccer drill uses the triangular passing route shown. Find the angle marked ?.



ANSWER _____

CHALLENGE One step up

Angles A and B each measure x°. Angle C measures 2x°. Find x. Use the dashed line to explain why the triangle's angles total 180°.



WORK SPACE AND ANSWER

ANSWER KEY

Angle Connections

GRADE 7 · 7A.GM.B.38

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the angle marked ?.	**60°**
2	Find the angle marked ?.	**63°**
3	Find both angles marked ?.	**70° and 70°**
4	Find x.	**x = 46**
5	Angle A is 3 times angle B. Find both angles.	**Angle A = 114°; angle B = 38°**
6	At the lower crossing, an acute angle measures 45°. What is the obtuse angle at the upper crossing?	**135°**

PART 2 · APPLY IT

1. **66°** Subtract the two known angles from 180°: 180° - 90° - 24° = 66°.
2. **55°** The known angles total 125°. Subtract from 180° to get 55°.

CHALLENGE

x = 45°. The dashed line is parallel to AB, so the angles beside C match angles A and B. Those two angles and angle C form a straight angle: x + x + 2x = 180°.

For the challenge, accept an explanation that uses matching angles on parallel lines and a straight angle of 180°.