

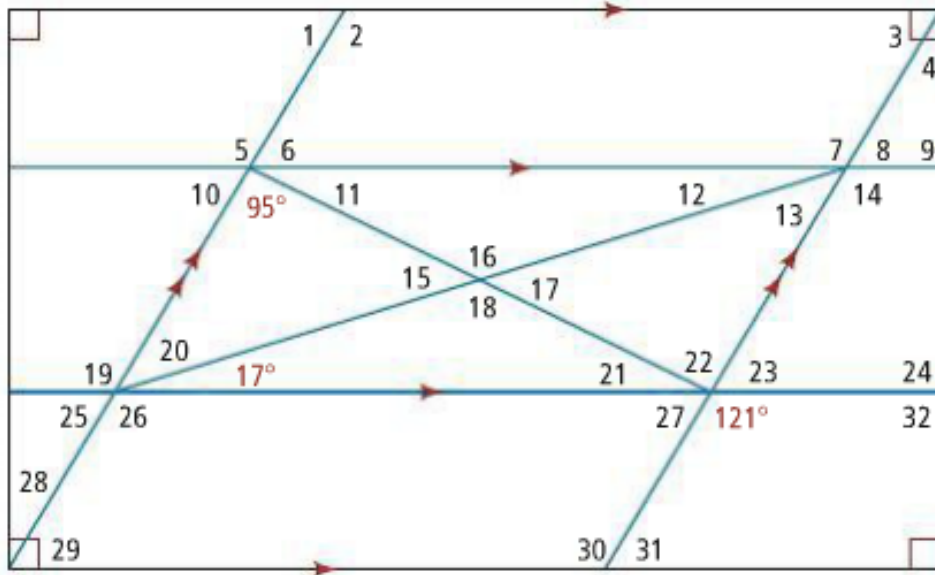
Name: _____ Date: _____ Band: _____
 Geometry

Unit 3: Parallel and Perpendicular Lines Project

Planning the Paths for a Park

Kiana works for a city’s planning department. The city is developing a new park, and Kiana is reviewing the plan for the builders. The rectangular park has two pairs of parallel walkways, one of which is also parallel to two sides of the park. In the blueprint of the park plan below, the walkways are shown in blue and parallel lines are indicated by red arrowheads.

Kiana notices that the blueprint provides only a few angle measures, shown in red. She would like to add additional angle measures to help the builders.



Task: Find the measure of each numbered angle in the blueprint.

Part 1: Apply What You’ve Learned

The blueprint contains many examples of the types of angle pairs you learned about, some formed by parallel lines and a transversal, and some formed by nonparallel lines and a transversal. Name all numbered angles in the blueprint that fit the given description.

A. an angle that forms a pair of alternate interior angles with $\angle 2$

B. an angle that forms a pair of corresponding angles with the angle that measures 121°

C. an angle that forms a pair of same-side interior angles with the angle that measures 121°

D. an angle that forms a pair of alternate interior angles with the angle that measures 95°

Part 2: Apply What You've Learned

Choose from the following words, numbers, and expressions to complete the following sentences.

The measure of $\angle 22$ is **a.** _____ because alternate interior angles formed by parallel lines and a transversal are **b.** _____.

The measure of $\angle 14$ is **c.** _____ because **d.** _____ angles formed by parallel lines and a transversal are congruent.

The measure of $\angle 32$ is **e.** _____ because **f.** _____ angles formed by parallel lines and a transversal are **g.** _____.

The measure of **h.** _____ is 17, because **i.** _____ angles formed by parallel lines and a transversal are congruent.

Part 3: Apply What You've Learned

A. Choose three triangles in the blueprint. Use the Triangle Angle-Sum Theorem to write an equation relating the measures of the angles of each of your triangles.

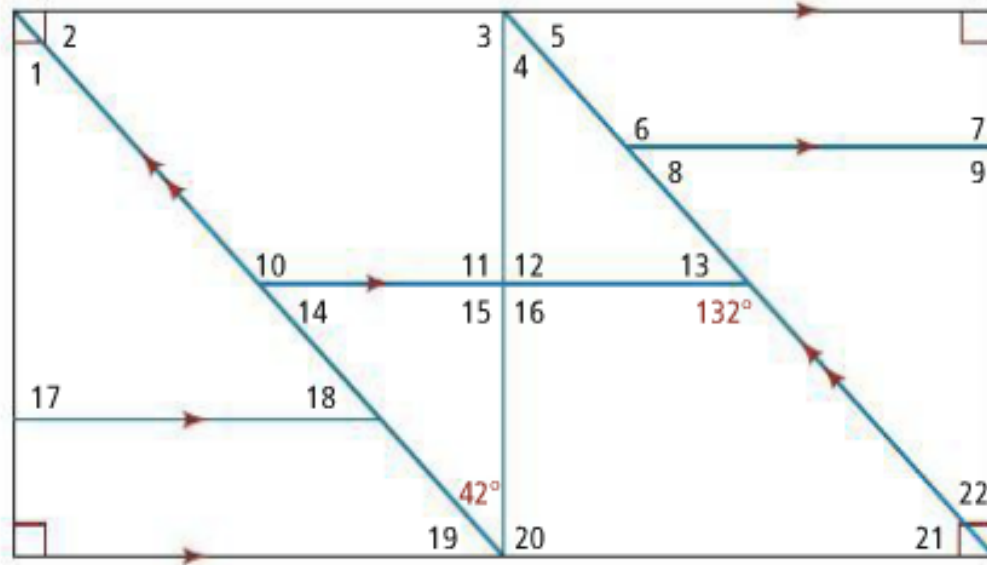
B. Choose one of the triangles you looked at in Part A. Find the measure of each angle of your triangle. Show all your steps and explain your reasoning.

Part 4: Completing the Performance Task

Solve the problem in the Task by finding the measure of each numbered angle in the blueprint. Show all your work and explain each step of your solution.

Part 5: On Your Own

A subcommittee of the city's planning department suggests a different plan for the walkways in the city's new park. In the revised blueprint shown below, the walkways are shown in blue and parallel lines are indicated by red arrowheads. The right angles of the rectangular park are marked, and two other angle measures are given in red.



Find the measure of each numbered angle in the blueprint.