Geometry

2.4 Use Postulates and Diagrams

# Postulates and Theorems

Postulate

accepted without proof

* Rule that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Theorem

proven

* Rule that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Basic Postulates

One line

Two points

1. Through any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ there exists exactly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Two points

1. A line contains at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

one points

lines

1. If two \_\_\_\_\_\_\_\_\_\_\_ intersect, then their intersection is exactly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

One plane

Three noncollinear

1. Through any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ points there exists exactly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Noncollinear points

1. A plane contains at least three \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Plane

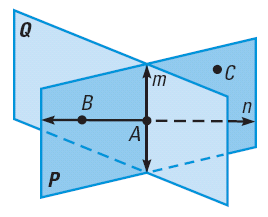
Plane

1. If two points lie in a \_\_\_\_\_\_\_\_\_\_, then the line containing them lies in the \_\_\_\_\_\_\_\_\_\_\_\_\_.

line

Planes

1. If two \_\_\_\_\_\_\_\_\_\_\_\_ intersect, then their intersection is a \_\_\_\_\_\_\_\_\_\_\_\_\_.

Which postulate allows you to say that the intersection of plane P and plane Q is a line?

If two planes intersect, then their intersection is a line.

Use the diagram in Example 2 to write examples of Postulates 5, 6, and 7.

5: Line n passes through points A and B.

6: Line n contains points A and B

7: Line m and line n intersect at point A

# Interpreting a Diagram

## You Can Assume

* All points shown are coplanar
* ∠AHB and ∠BHD are a linear pair
* ∠AHF and ∠BHD are vertical angles
* A, H, J, and D are collinear

G

F

A

H

B

E

J

C

D

***P***

* and intersect at H

## ***You Cannot Assume***

* G, F, and E are collinear
* and intersect
* and do not intersect
* ∠BHA ≅ ∠CJA
* m∠AHB = 90°

Sketch a diagram showing at its midpoint M.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|

|

X

C

B

A

F

E

*ℓ*

State whether each of the follow can be assumed.

A, B, and C are collinear

Yes

⊥ line ℓ

Yes

⊥ plane

No

intersects at B

Yes

line ℓ ⊥

No

Points B, C, and X are collinear

No

Assignment: 99 #2-28 even, 34, 40-56 even = 24 total