

Geometry · Parallel Lines, Transversals and Proofs · Quiz

Common Core G-CO.C.9 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

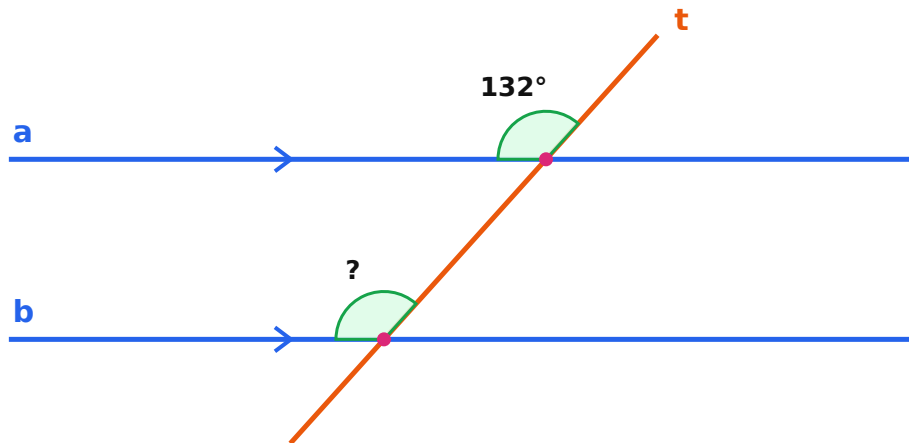
This 10-question quiz checks angle pairs formed by a transversal, parallel line theorems, their converses and the perpendicular bisector theorem. Pick the one best answer for each question.

GeometryCommon Core: G-CO.C.9

Questions

Question 1

Lines a and b are parallel and angle 1 measures 132° . What is the measure of angle 5?

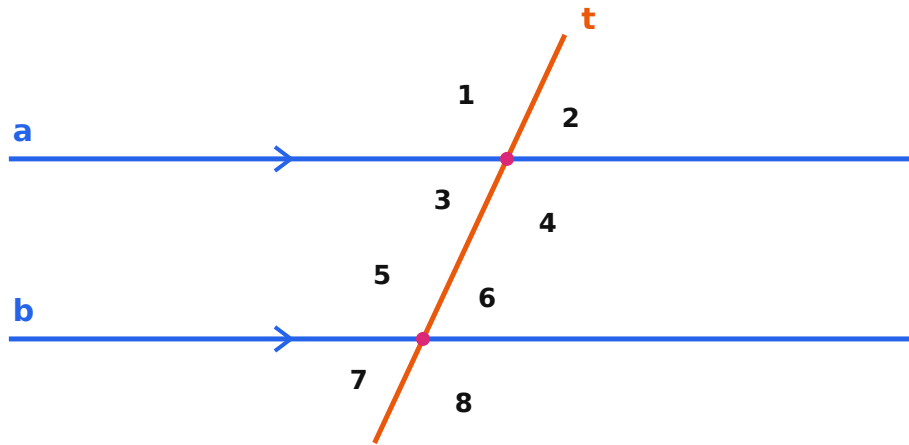


Find angle 5.

- A. 48°
- B. 42°
- C. 138°
- D. 132°

Question 2

Lines a and b are parallel. Which pair of angles is a pair of alternate interior angles?



Use the numbered angles.

- A. $\angle 3$ and $\angle 5$
- B. $\angle 2$ and $\angle 6$
- C. $\angle 1$ and $\angle 8$
- D. $\angle 4$ and $\angle 5$

Question 3

Two parallel lines are cut by a transversal. One same-side interior angle measures 74° . What does the other measure?

- A. 106°
- B. 74°
- C. 16°
- D. 286°

Question 4

Corresponding angles measure $(2x+10)^\circ$ and $(3x-5)^\circ$. For what value of x are the lines parallel?

- A. $x=5$
- B. $x=35$
- C. $x=15$
- D. $x=25$

Question 5

Two lines are cut by a transversal. Which pair of same-side interior angles proves the lines are parallel?

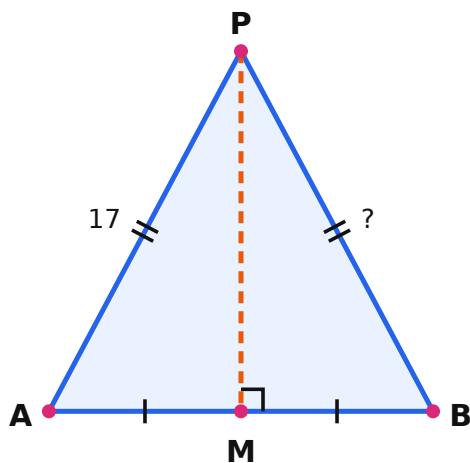
- A. 115° and 115°
- B. 115° and 75°

C. 115° and 65°

D. 65° and 65°

Question 6

Line l is the perpendicular bisector of segment AB , and P is on l . What is PB ?



$$PA = 17.$$

A. 15

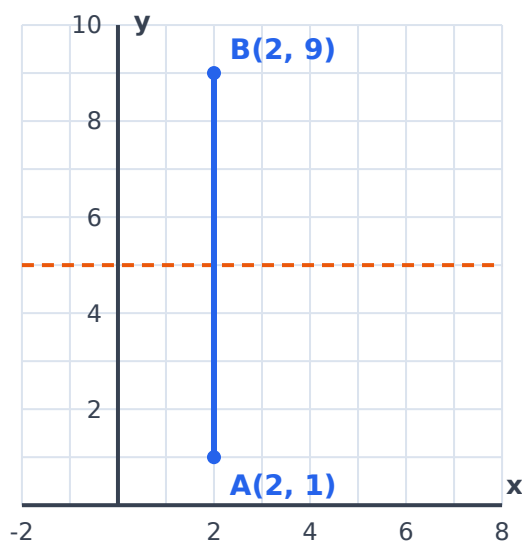
B. 17

C. 34

D. 8.5

Question 7

Segment AB has endpoints $A(2, 1)$ and $B(2, 9)$. Which point lies on the perpendicular bisector of AB ?



The perpendicular bisector of a vertical segment is horizontal.

- A. (-1, 5)
- B. (5, -1)
- C. (5, 9)
- D. (2, 3)

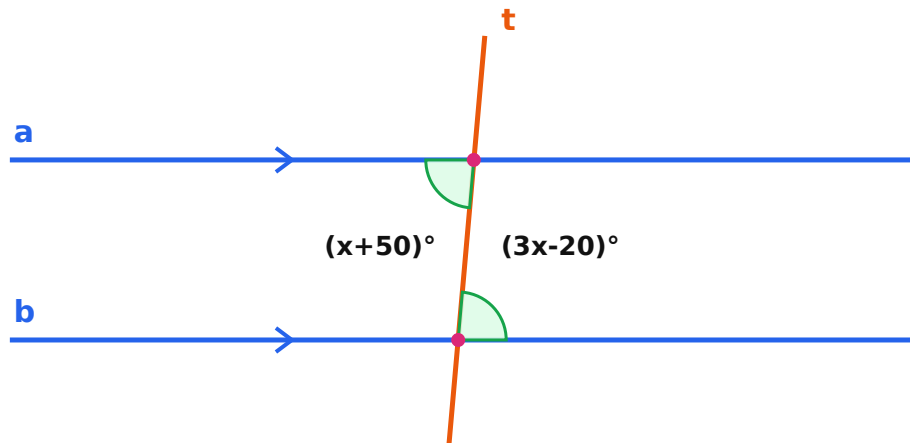
Question 8

The step "Angles 2 and 6 are equal, so line a is parallel to line b" is justified by which reason?

- A. Corresponding Angles Theorem
- B. Corresponding Angles Converse
- C. Vertical Angles Theorem
- D. Alternate Interior Angles Theorem

Question 9

Lines a and b are parallel. What is the measure of each marked angle?



Angles 3 and 6 are marked.

- A. 85°
- B. 35°
- C. 95°
- D. 170°

Question 10

Parallel lines are cut by a transversal. Same-side interior angles measure $(x+30)^\circ$ and $(2x+60)^\circ$. What is the larger angle?

- A. 60°
- B. 90°
- C. 150°
- D. 120°

Answer key

1. **D** - Angles 1 and 5 are corresponding angles, so they are equal. Choosing 48° mistakes them for a linear pair.
2. **D** - Alternate interior angles lie between the lines on opposite sides of the transversal. $\angle 3$ and $\angle 5$ are on the same side.
3. **A** - Same-side interior angles are supplementary, so $180 - 74 = 106$. Choosing 74° wrongly treats them as equal.
4. **C** - Set the angles equal: $2x + 10 = 3x - 5$ gives $x = 15$. Setting their sum to 180 gives $x = 35$, which is wrong for corresponding angles.
5. **C** - Same-side interior angles must add to 180° : $115 + 65 = 180$. The other pairs add to 230, 190 and 130.
6. **B** - A point on the perpendicular bisector is equidistant from both endpoints, so $PB = PA = 17$. Doubling or halving the length is a common slip.
7. **A** - The midpoint of AB is (2, 5) and AB is vertical, so the bisector is the horizontal line $y = 5$. Only (-1, 5) is on it.
8. **B** - The conclusion that lines are parallel comes from a converse. The Corresponding Angles Theorem starts from parallel lines instead.
9. **A** - Alternate interior angles are equal: $x + 50 = 3x - 20$ gives $x = 35$ and each angle is $35 + 50 = 85$ degrees. 35° is the value of x , not the angle.
10. **D** - The angles add to 180: $3x + 90 = 180$, so $x = 30$. The angles are 60 and 120, and the larger is 120° .

Remember:

- Standard G-CO.C.9 covers proving theorems about lines and angles, including parallel lines and perpendicular bisectors.
- Parallel lines cut by a transversal: corresponding angles and alternate interior angles are equal.
- Same-side interior angles between parallel lines are supplementary (sum 180 degrees).
- Converses: equal corresponding or alternate angles, or supplementary same-side interior angles, prove two lines parallel.
- A point is on the perpendicular bisector of a segment exactly when it is equidistant from the endpoints.