

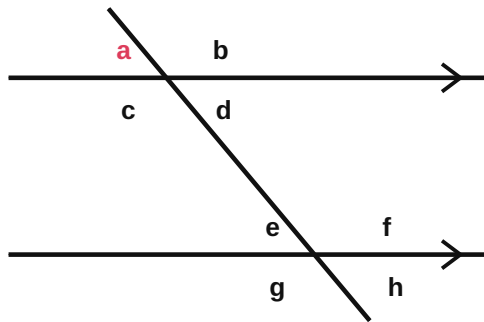
Boost Free Lessons - Year 8 Maths

Lesson 20: Angles on Parallel Lines

Name: _____ Grade: _____ Date: _____

Worked Example 1

In the diagram below, angle $a = 118^\circ$. Find angles b , c and d .



1. Angles a and b sit together on a straight line, so they add to 180° : $b = 180 - 118 = 62^\circ$.
2. Angles a and d are vertically opposite, so they are equal: $d = 118^\circ$.
3. Angles b and c are vertically opposite, so they are equal: $c = 62^\circ$.

$b = 62^\circ$, $c = 62^\circ$, $d = 118^\circ$

Worked Example 2

Two co-interior angles on parallel lines are $(2x + 10)^\circ$ and $(3x - 5)^\circ$. Find x .

1. Co-interior angles on parallel lines are supplementary, so they add to 180° .
2. Write the equation: $(2x + 10) + (3x - 5) = 180$.
3. Collect like terms: $5x + 5 = 180$.
4. Subtract 5 from both sides, then divide by 5.

$x = 35$

Remember: **F** shape = corresponding (equal). **Z** shape = alternate (equal). **C** shape = co-interior (add to 180°). Vertically opposite angles are always equal.



Question 1: Find the size of each angle described below, given that the lines are parallel.

1. The corresponding angle to 72°

2. The alternate angle to 118°

3. The co-interior angle to 65°

4. The vertically opposite angle to 143°

5. The co-interior angle to 90°

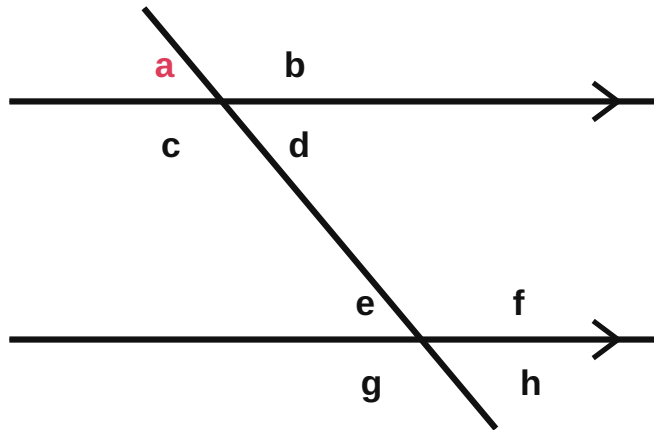
6. The alternate angle to 47°

7. The corresponding angle to 105°

8. The angle on a straight line next to 38°



Question 2: In the diagram below, angle $a = 130^\circ$. Find each of the following.



1. Find b .
2. Find c .
3. Find d .
4. Find e .
5. Find f .
6. Find g .
7. Find h .
8. Name the relationship between angles c and e .



Question 3: Answer the following questions.

1. Two corresponding angles on parallel lines are $(3x)^\circ$ and $(x + 40)^\circ$. Find x .
2. Two co-interior angles on parallel lines are $(4x)^\circ$ and $(2x)^\circ$. Find x .
3. Two alternate angles on parallel lines are $(5x - 10)^\circ$ and $(3x + 30)^\circ$. Find x .
4. Two co-interior angles on parallel lines are $(x + 25)^\circ$ and $(2x + 35)^\circ$. Find x .
5. Two lines are cut by a transversal, and a pair of alternate angles both measure 63° . Are the lines parallel? Explain your answer.





Every student has gaps. The hard part is knowing exactly where they are.
That is what a Boost assessment is for.

Book a Free Assessment

Normally valued at \$199, free for new families

- A friendly skills check aligned to the NSW syllabus
- Face to face with our qualified tutors
- A clear picture of your child's strengths and gaps
- A weekly plan built around what they actually need

Book a Free Assessment →

boosttutoring.com.au/contact



Answers: Angles on Parallel Lines**Question 1**

- | | |
|----------------|----------------|
| 1. 72° | 5. 90° |
| 2. 118° | 6. 47° |
| 3. 115° | 7. 105° |
| 4. 143° | 8. 142° |

Question 2

- | | |
|--------------------|--|
| 1. $b = 50^\circ$ | 5. $f = 50^\circ$ |
| 2. $c = 50^\circ$ | 6. $g = 50^\circ$ |
| 3. $d = 130^\circ$ | 7. $h = 130^\circ$ |
| 4. $e = 130^\circ$ | 8. Co-interior angles (they add to 180°) |

Question 3

1. $x = 20$
2. $x = 30$
3. $x = 20$
4. $x = 40$
5. Yes. Alternate angles are only equal when the two lines are parallel.

