Adjacent Angles and the Angle Addition Postulate

Next door neighbors...

What does adjacent mean? Who lives adjacent to you? No, it's not the scary old man across the street. It's the person whose house or condo or apartment is directly next to yours. (Maybe even connected to yours if you have the right kind of house...) Adjacent angles are the same way. Look…

These are adjacent angles...

These are not...

The definition of **Adjacent Angles** is any two angles that share a common ray and vertex. They must share both if they share neither. That is Fig. 4. If they share just the ray that is Fig. 5, and if they share just the vertex that is Fig. 6.

The **Angle Addition Postulate**. One way of describing a postulate is... "oh duh."

Well, this should be "oh duh" to you. If you add the measures of two adjacent angles it gives you the measure of the larger third angle... Check it out....

If I add $m\angle ABC$ and $m\angle CBD$ I get $78^\circ$ which is of course $m\angle ABD$. "Oh duh" right? Right...... Good...Okay, let's look at one more example...

$m\angle ABD=120^\circ$, $m\angle CBD=67^\circ$. Find $m\angle ABC$.

Well, since we know $m\angle ABC + m\angle CBD=120^\circ$, we get $m\angle ABC + 67^\circ=120^\circ$. A little easy algebra and presto, $m\angle ABC=53^\circ$! Off to the practice grounds with you! (They're right next door...)
If the pair of angles is adjacent, bubble "T". If not, bubble "F".

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

Bubble T for True and F for False.

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Find the indicated angle measure.
1. m\(\angle ABC=51^\circ\), m\(\angle CBD=38^\circ\). Find m\(\angle ABD\).

\[51^\circ + 38^\circ = 89^\circ\]

m\(\angle ABD=89^\circ\)

3. m\(\angle ABC=44^\circ\), m\(\angle ABD=163^\circ\). Find m\(\angle CBD\).

5. m\(\angle ABC=42^\circ\), m\(\angle CBD=35^\circ\). Find m\(\angle ABD\).

7. m\(\angle DBC=29^\circ\), m\(\angle ABC=112^\circ\). Find m\(\angle ABD\).

2. m\(\angle ABC=31^\circ\), m\(\angle CBD=43^\circ\). Find m\(\angle ABD\).

4. m\(\angle ABC=21^\circ\), m\(\angle ABD=78^\circ\). Find m\(\angle CBD\).

6. m\(\angle ABC=36^\circ\), m\(\angle ABD=125^\circ\). Find m\(\angle CBD\).

8. m\(\angle CBD=48^\circ\), m\(\angle ABD=97^\circ\). Find m\(\angle CBD\).

Bubble all the correct answers from above. Don’t bubble incorrect answers.

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9. \( m\angle ABC = 45^\circ, m\angle CBD = 49^\circ \). Find \( m\angle ABD \).

10. \( m\angle ABC = 67^\circ, m\angle ABD = 119^\circ \). Find \( m\angle CBD \).

11. \( m\angle ABD = 115^\circ, m\angle CBD = 65^\circ \). Find \( m\angle ABC \).

12. \( m\angle ABC = 67^\circ, m\angle ABD = 123^\circ \). Find \( m\angle CBD \).

13. \( m\angle ABC = 58^\circ, m\angle CBD = 37^\circ, m\angle DBE = 59^\circ \). Find \( m\angle ABE \).

14. \( m\angle ABC = 22^\circ, m\angle CBD = 28^\circ, m\angle DBE = 78^\circ \). Find \( m\angle ABE \).

15. \( m\angle ABC = 61^\circ, m\angle CBD = 25^\circ, m\angle DBE = 15^\circ \). Find \( m\angle ABE \).

16. \( m\angle ABC = 25^\circ, m\angle CBD = 41^\circ, m\angle DBE = 36^\circ \). Find \( m\angle ABE \).

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Bubble all the correct answers from above. Don't bubble incorrect answers.

\( \bigcirc 101^\circ \) \( \bigcirc 61^\circ \) \( \bigcirc 102^\circ \) \( \bigcirc 180^\circ \) \( \bigcirc 94^\circ \) \( \bigcirc 154^\circ \) \( \bigcirc 128^\circ \) \( \bigcirc 99^\circ \) \( \bigcirc 52^\circ \) \( \bigcirc 54^\circ \) \( \bigcirc 56^\circ \) \( \bigcirc 99^\circ \) \( \bigcirc 107^\circ \) \( \bigcirc 34^\circ \)

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17. \(m\angle ABE=111^\circ, m\angle ABC=31^\circ, m\angle DBE=52^\circ\).
Find \(m\angle CBD\).

18. \(m\angle ABE=136^\circ, m\angle CBD=35^\circ, m\angle DBE=42^\circ\).
Find \(m\angle ABC\).

19. \(m\angle ABF=170^\circ, m\angle ABC=21^\circ, m\angle DBE=19^\circ, m\angle EBF=23^\circ\).
Find \(m\angle CBD\).

20. \(m\angle ABC=58^\circ, m\angle CBD=48^\circ, m\angle DBE=31^\circ, m\angle EBF=43^\circ\).
Find \(m\angle ABF\).

21. \(m\angle ABE=136^\circ, m\angle ABD=67^\circ, m\angle CBD=35^\circ\).
Find \(m\angle DBE\).

22. \(m\angle ABE=136^\circ, m\angle CBE=77^\circ, m\angle ABD=89^\circ\).
Find \(m\angle CBD\).

23. \(m\angle ABF=169^\circ, m\angle ABC=39^\circ, m\angle CBD=26^\circ, m\angle EBF=23^\circ\).
Find \(m\angle DBE\).

24. \(m\angle ABF=165^\circ, m\angle ABC=36^\circ, m\angle DBE=21^\circ, m\angle EBF=57^\circ\).
Find \(m\angle CBD\).

Bubble all the correct answers from above. Don’t bubble incorrect answers.

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