

Classwork 2.1 Vertical Angles, Linear Pairs, Complementary/Supplementary Angles & Angle Bisector

Find the **complement** of each angle.

1. 35°

2. 48°

3. 12°

Find the **supplement** of each angle.

4. 40°

5. 126°

6. 72°

Answer the following questions as specific as possible.

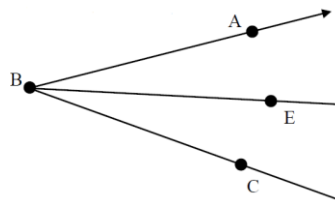
7. Can two supplementary angles both be obtuse angles? Acute angles? Why?

8. Can two supplementary angles both be right angles? Why?

Refer to the diagram to answer each. \overline{BE} is an angle bisector.

9. If $m\angle ABE = 40^\circ$, find $m\angle EBC$.

10. If $m\angle ABC = 70^\circ$, find $m\angle ABE$.



11. $\angle 1$ and $\angle 2$ are complementary. Solve for x and the measure of both angles.

$\angle 1 = 5x + 2$
 $\angle 2 = 2x + 4$

12. $\angle 1$ and $\angle 2$ are supplementary. Solve for x and the measure of both angles.

$\angle 1 = 12x + 3$
 $\angle 2 = 4x + 1$

13. One of two complementary angles is 16 degrees less than its complement. Find the measure of both angles.

Find the **complement** of each angle.

1. 35°

55°

2. 48°

42°

3. 12°

78°

Find the **supplement** of each angle.

4. 40°

140°

5. 126°

54°

6. 72°

108°

7. Can two supplementary angles both be obtuse angles? Acute angles? Why?

No, if both angles are obtuse angles (between 90° and 180°) when you add them together, the sum will be over 180°

8. Can two supplementary angles both be right angles? Why?

Yes, as if both are right angles, both equal 90° and $90 + 90 = 180^\circ$

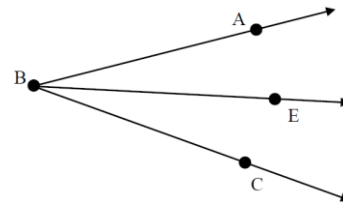
Refer to the diagram to answer each. \overline{BE} is an angle bisector.

9. If $m\angle ABE = 40^\circ$, find $m\angle EBC$.

40°

10. If $m\angle ABC = 70^\circ$, find $m\angle ABE$.

35°



11. $\angle 1$ and $\angle 2$ are complementary. Solve for x and the measure of both angles.

$\angle 1 = 5x + 2$

$\angle 2 = 2x + 4$

$x = 12$

$\angle 1 = 62^\circ$

$\angle 2 = 28^\circ$

12. $\angle 1$ and $\angle 2$ are supplementary. Solve for x and the measure of both angles.

$\angle 1 = 12x + 3$

$\angle 2 = 4x + 1$

$x = 11$

$\angle 1 = 135^\circ$

$\angle 2 = 45^\circ$

13. One of two complementary angles is 16 degrees less than its complement. Find the measure of both angles.

$\angle 1 = 53^\circ$

$\angle 2 = 37^\circ$

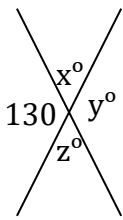
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1. One of two supplementary angles is 98° greater than its supplement. Find the measure of both angles.

2. One of two supplementary angles is 123° less than twice its supplement. Find the measure of both angles.

Solve for the variable(s).

3.

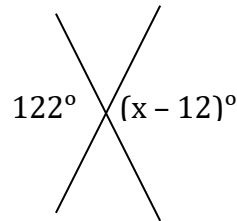


$x =$

$y =$

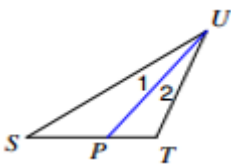
$z =$

4.



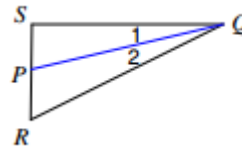
$x =$

5. Given that \overline{PU} is an angle bisector, Find $m\angle 1$, if $m\angle SUT = 34^\circ$



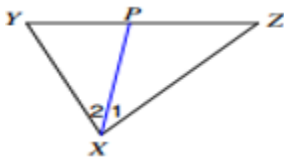
$m\angle 1 =$

6. Given that \overline{PQ} is an angle bisector, Find $m\angle SQR$, if $m\angle 2 = 13^\circ$



$m\angle SQR =$

7. Given that \overline{PX} is an angle bisector, Find x if $m\angle 2 = 4x + 5$ and $m\angle 1 = 5x - 2$



$x =$

Solutions

1. One of two supplementary angles is 98° greater than its supplement. Find the measure of both angles.

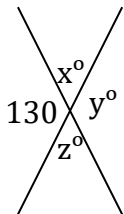
$\angle 1 = 41^\circ$ $\angle 2 = 139^\circ$

2. One of two supplementary angles is 123° less than twice its supplement. Find the measure of both angles.

$\angle 1 = 53^\circ$ $\angle 2 = 37^\circ$
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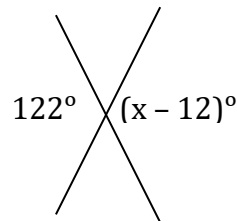
Solve for the variable(s).

- 3.



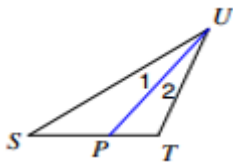
$x = 50^\circ$ $y = 130^\circ$ $z = 50^\circ$

- 4.



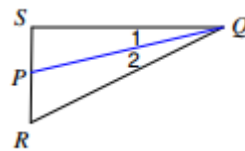
$x = 134^\circ$

5. Given that \overline{PU} is an angle bisector, Find $m\angle 1$, if $m\angle SUT = 34^\circ$



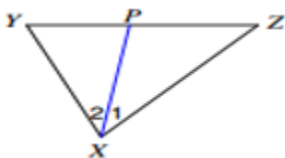
$m\angle 1 = 17^\circ$

6. Given that \overline{PQ} is an angle bisector, Find $m\angle SQR$, if $m\angle 2 = 13^\circ$



$m\angle 1 = 26^\circ$

7. Given that \overline{PX} is an angle bisector, Find x if $m\angle 2 = 4x + 5$ and $m\angle 1 = 5x - 2$



$x = 7$
