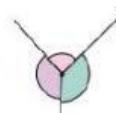


Angle Properties

7th Grade Worksheet



These angles are **angles at a point**.

Angles at a point add to 360° .

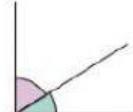
There are 360° in one complete turn.



These angles are **angles on a line**.

Angles on a line add to 180° .

Angles which add to 180° are called **supplementary angles**.



These angles are **angles in a right angle**.

Angles in a right angle add to 90° .

Angles which add to 90° are called **complementary angles**.

Lines which meet at 90° are said to be **perpendicular**.

Example 1

- a Are angles with sizes 37° and 53° complementary?
- b What angle size is the supplement of 48° ?

- a $37^\circ + 53^\circ = 90^\circ$. So, the angles are complementary.
- b The angle size is $180^\circ - 48^\circ = 132^\circ$.

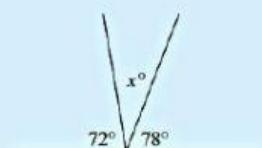
Example 2

Find the value of the unknown in:

a



b



- a The angles 58° and x° are complementary.

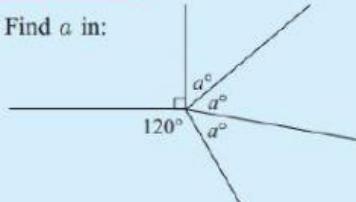
$$\begin{aligned}\therefore x &= 90 - 58 \\ \therefore x &= 32\end{aligned}$$

- b The three angles add to 180°

$$\begin{aligned}\therefore x &= 180 - 72 - 78 \\ \therefore x &= 30\end{aligned}$$

Example 3

Find a in:



The sum of the five angles is 360°

\therefore the three equal angles add to $360^\circ - 90^\circ - 120^\circ = 150^\circ$

So, each must be $150^\circ \div 3 = 50^\circ$
 $\therefore a = 50$.

Exercise

1. Add the following pairs of angles and state whether they are complementary, supplementary, or neither:

a $20^\circ, 70^\circ$

b $30^\circ, 150^\circ$

c $110^\circ, 40^\circ$

d $47^\circ, 43^\circ$

e $107^\circ, 63^\circ$

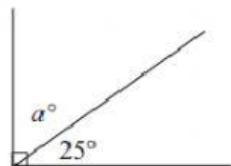
f $35^\circ, 55^\circ$

2. Find the size of the angle complementary to: a 30° b 5° c 85°

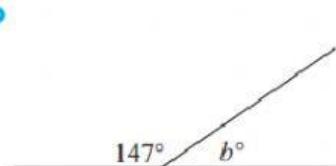
3. Find the size of the angle supplementary to: a 100° b 5° c 90°

4. Find the value of the unknown in:

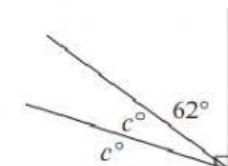
a



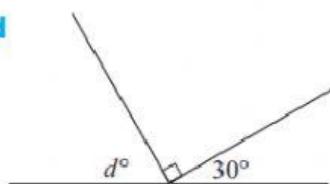
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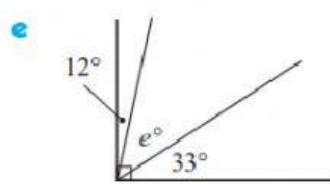
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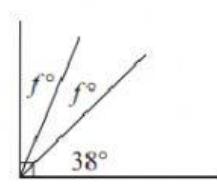
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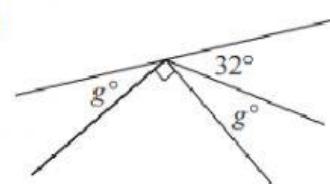
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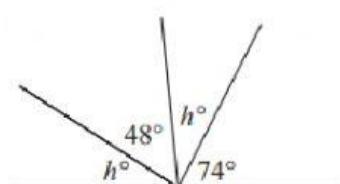
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g



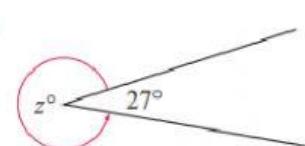
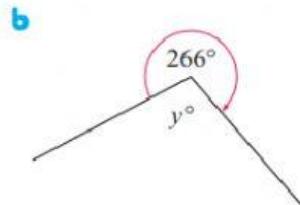
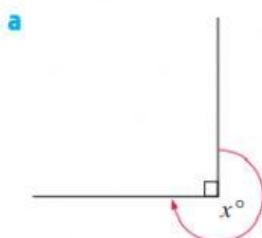
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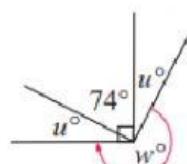
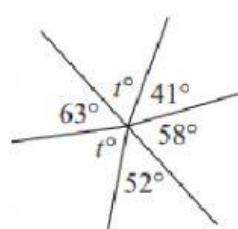
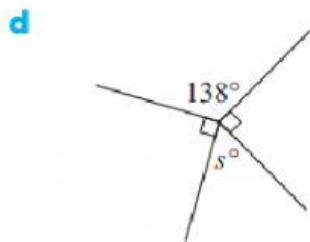
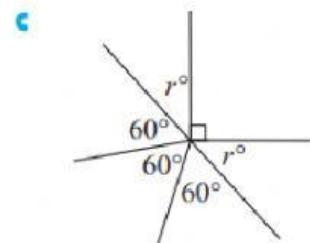
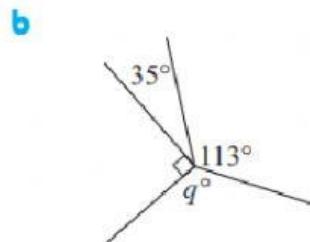
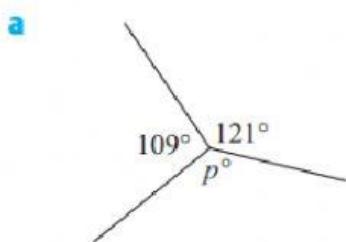
i



5. Find the sizes of the unknown angles:



6. Find the values of the unknowns in:



7. Copy and complete:

- a the size of the complement of x° is
- b the size of the supplement of y° is

8. Classify the following angle pairs as complementary, supplementary or neither:

- a $\hat{B}OC$ and $\hat{C}OD$
- b $\hat{A}OC$ and $\hat{C}OE$
- c $\hat{C}OD$ and $\hat{D}OE$
- d $\hat{A}OB$ and $\hat{B}OE$

