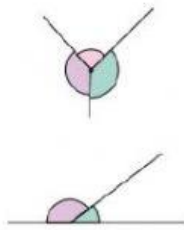


Angle Properties

7th Grade Worksheet



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

Angles at a point add to 360° .



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**.

There are 360° in one complete turn.



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 $180^\circ - 48^\circ = 132^\circ$.

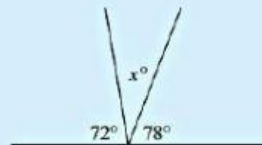
Example 2

Find the value of the unknown in:

a



b

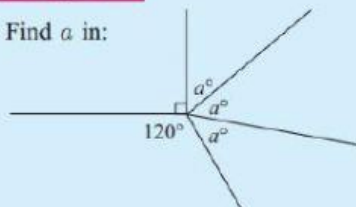


- a The angles 58° and x° are complementary.
- $\therefore x = 90 - 58$
- $\therefore x = 32$

- b The three angles add to 180°
- $\therefore x = 180 - 72 - 78$
- $\therefore x = 30$

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 $47^\circ, 43^\circ$

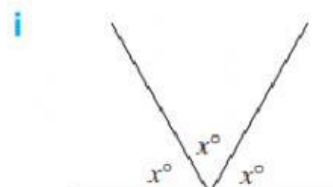
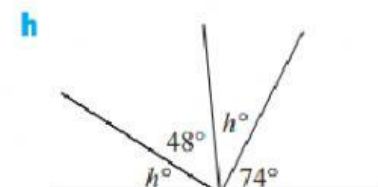
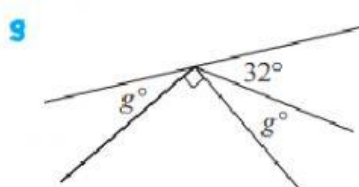
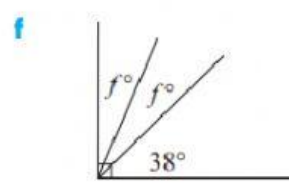
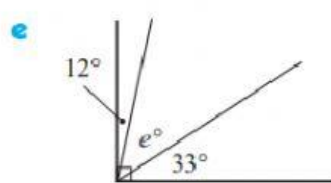
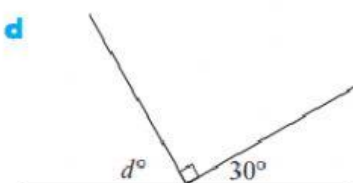
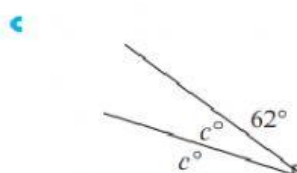
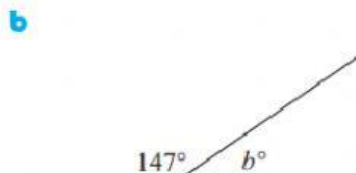
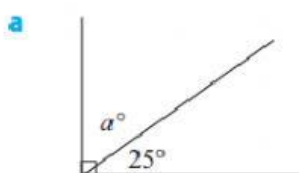
e $107^\circ, 63^\circ$

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

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

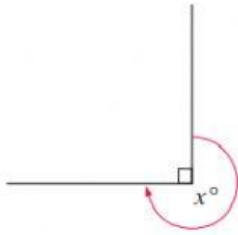
3. Find the size of the angle supplementary to: **a** 100° **b** 5° **c** 90°

4. Find the value of the unknown in:

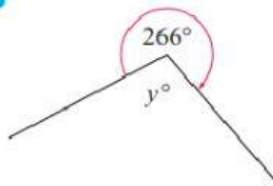


5. Find the sizes of the unknown angles:

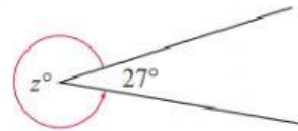
a



b

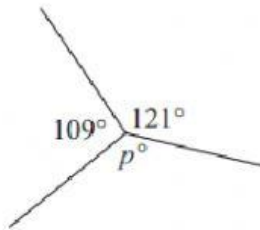


c

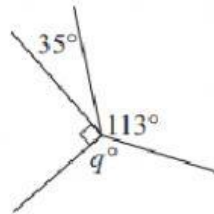


6. Find the values of the unknowns in:

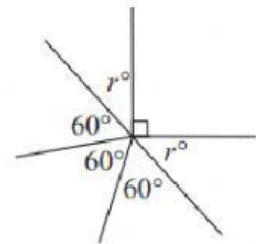
a



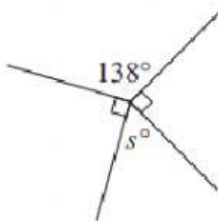
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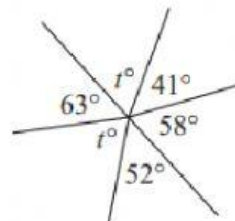
c



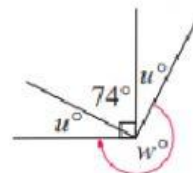
d



e



f



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 $\widehat{BOC}$ and $\widehat{COD}$

b $\widehat{AOC}$ and $\widehat{COE}$

c $\widehat{COD}$ and $\widehat{DOE}$

d $\widehat{AOB}$ and $\widehat{BOE}$

