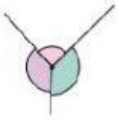
# Angle Properties

# 7th Grade Worksheet



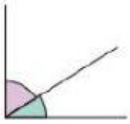
These angles are **angles at a point**.

Angles at a point add to $360^o$.

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

Angles on a line add to $180^o$.

Angles which add to $180^o$ are called **supplementary angles**.



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

Angles in a right angle add to $90^o$.

Angles which add to $90^o$ are called **complementary angles**.
Lines which meet at $90^o$ are said to be **perpendicular**.

**Example 1**

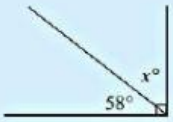
**a** Are angles with sizes $37^o$ and $53^o$ complementary?
**b** What angle size is the supplement of $48^o$?

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

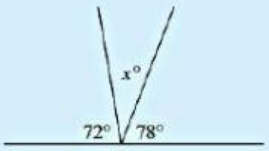
**Example 2**

Find the value of the unknown in:

**a**




**b**

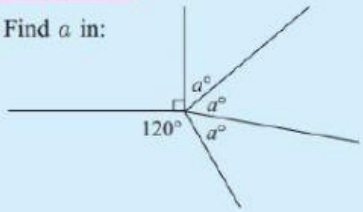



**a** The angles $58^o$ and $x^o$ are complementary.
$\therefore \quad x = 90 - 58$
$\therefore \quad x = 32$

**b** The three angles add to $180^o$
$\therefore \quad x = 180 - 72 - 78$
$\therefore \quad x = 30$

**Example 3**

Find $a$ in:




The sum of the five angles is $360^o$

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

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

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# Exercise

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

   **a** $20^o$, $70^o$ **b** $30^o$, $150^o$ **c** $110^o$, $40^o$

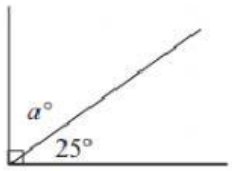
   **d** $47^o$, $43^o$ **e** $107^o$, $63^o$ **f** $35^o$, $55^o$

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

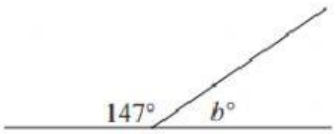
3. Find the size of the angle supplementary to: **a** $100^o$ **b** $5^o$ **c** $90^o$

4. Find the value of the unknown in:

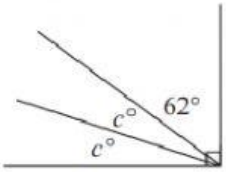
**a**



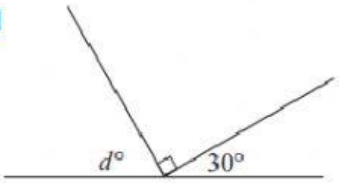

**b**



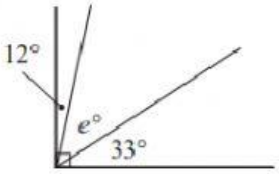

**c**



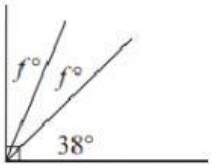

**d**



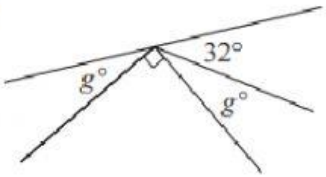

**e**



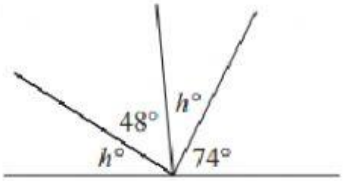

**f**



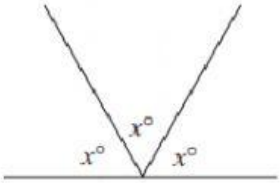

**g**




**h**




**i**

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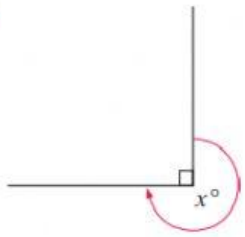
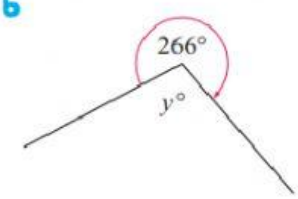
5. Find the sizes of the unknown angles:

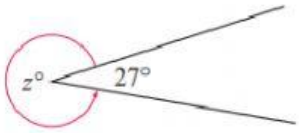
**a**




**b**

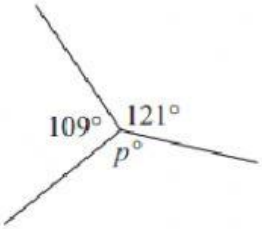



**c**

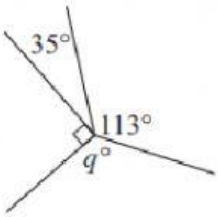



6. Find the values of the unknowns in:

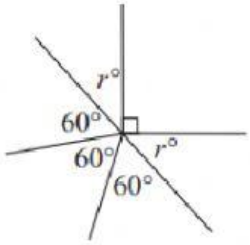
**a**



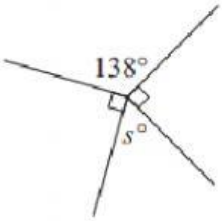

**b**



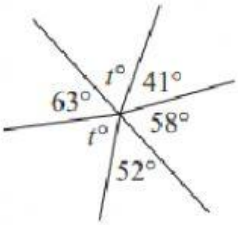

**c**



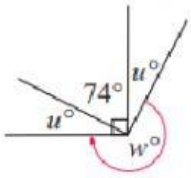

**d**




**e**




**f**




7. Copy and complete:

**a** the size of the complement of $x^o$ is .....

**b** the size of the supplement of $y^o$ is .....

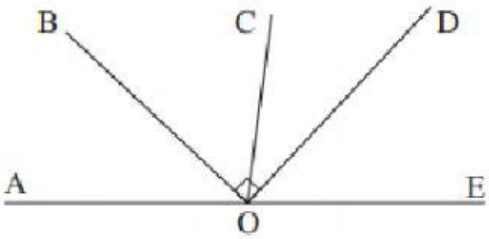
8. Classify the following angle pairs as complementary, supplementary or neither:

**a** $B\hat{O}C$ and $C\hat{O}D$

**b** $A\hat{O}C$ and $C\hat{O}E$

**c** $C\hat{O}D$ and $D\hat{O}E$

**d** $A\hat{O}B$ and $B\hat{O}E$

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