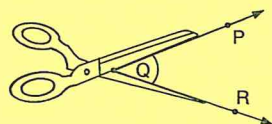


Angles

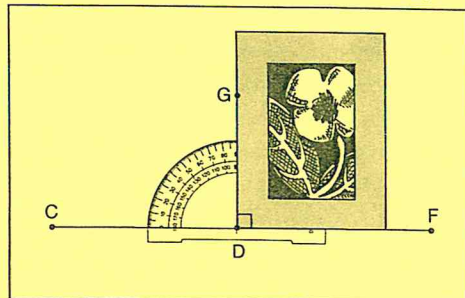
Two rays that have the same end point form an **angle**. The common end point is the **vertex** of the angle.



Angle PQR or RQP has Q as its vertex. Its symbol is $\angle PQR$ or $\angle RQP$.

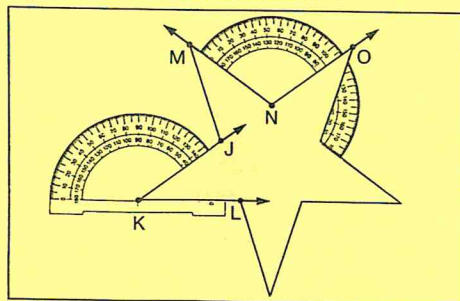
A **protractor** is used to measure an angle. The unit of measure is a degree.

$\angle GDF$ is a **right angle**. It forms a square corner, and its measure is 90° (90 degrees).



$\angle CDF$ is a **straight angle**. Its measure is 180° .

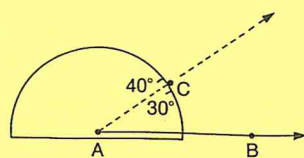
$\angle JKL$ is an **acute angle**. Its measure is greater than 0° and less than 90° .



$\angle MNO$ is an **obtuse angle**. Its measure is greater than 90° and less than 180° .

A protractor is also used to draw an angle.

For an angle of 35° with vertex A, place the protractor along \overrightarrow{AB} with its centre at A. Find 35° on the scale. Mark a dot. Then complete the angle.



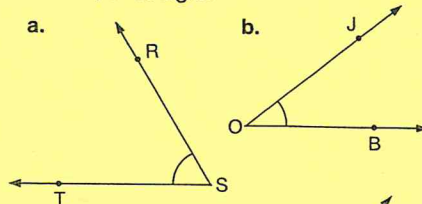
WORKING TOGETHER

- Use tracing paper. Copy angles PQR, JKL, MNO, and CAB above. Extend the arms. Measure them with a protractor.
- Use a protractor to draw an angle that measures 100° . Name it $\angle RST$. Also, draw $\angle VSR$ with measure 80° .

~~#1-8 OMIT 5~~

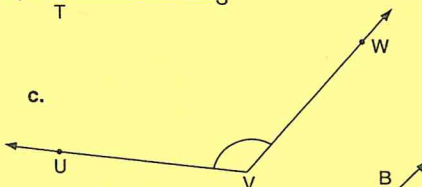
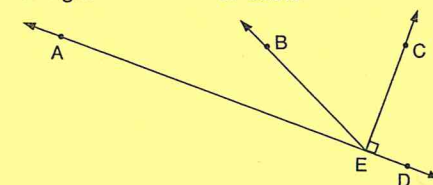
APPLICATIONS AND EXERCISES

- Name the angle in two ways. Compare its size with 90° . Classify it as acute, right, obtuse, or straight.
- Estimate, then measure the size of each angle in exercise 1.

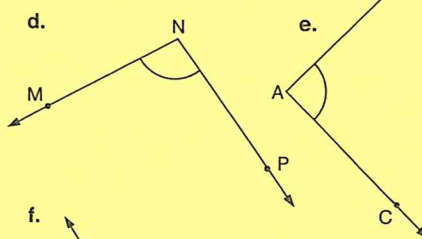


- Name the angles shown below that are of this type.

- straight
- obtuse
- right
- acute



- Estimate, then measure the size of each angle in exercise 3.



- List or sketch five objects that suggest angles. Classify each angle.

- Use a straightedge. Sketch an angle that you estimate to have this measure.

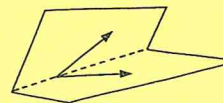
- 48°
- 108°
- 10°
- 90°
- 135°
- 45°
- 180°
- 6°

- Use a protractor. Measure the angles sketched in exercise 6. Draw an angle for the given measure if your sketch is more than 5° off.

- Classify each angle in exercise 6 as acute, right, obtuse, or straight.

Read

Draw an angle on tracing paper. Fold to fit one ray onto the other ray. What is special about the angles formed from the first angle and the fold line? Measure to check.



Try This