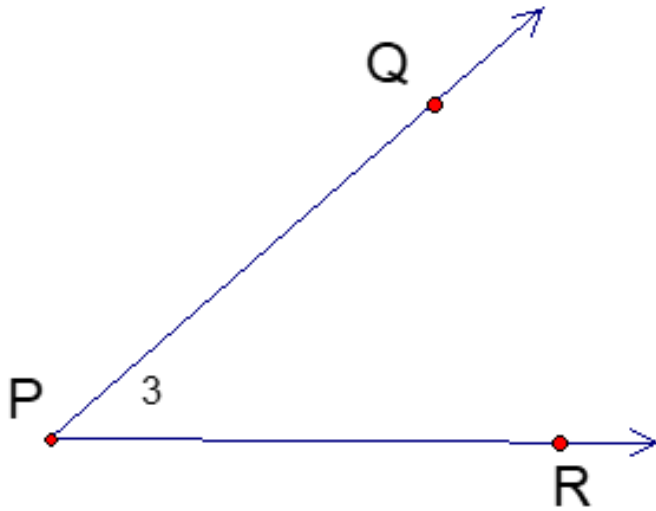# Angles

This can be called:

$\angle QPR$
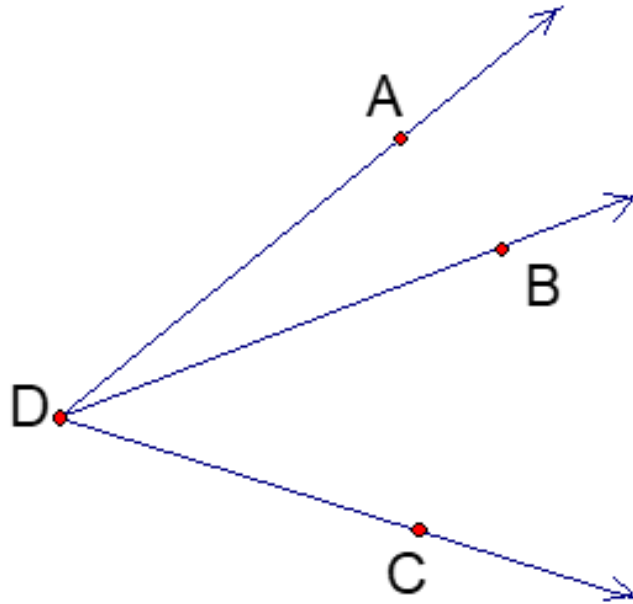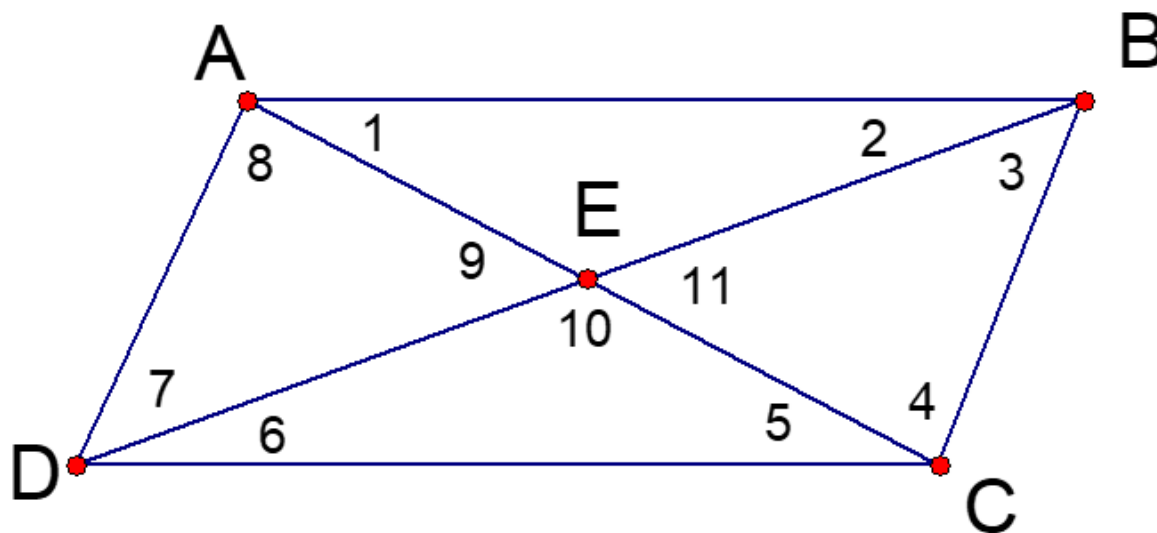
$\angle RPQ$

$\angle P$

$\angle 3$

IMPORTANT

- When naming an angle, you can only use one letter when it is completely clear which angle you are naming.

We can't talk about $\angle D$ because it could refer to the big angle or one of the little angles.

Ex. Let practice naming some angles

<u>Def.</u> The <u>measure</u> of an angle is the size of the angle. The units we use are <u>degrees</u>. The measure of $\angle ABC$ is written $m\angle ABC$ (with an "m" in the front).
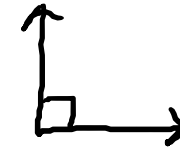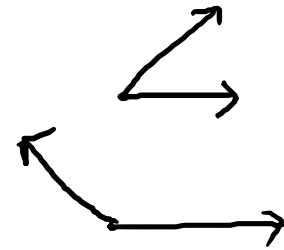
$\angle A$ is <u>acute</u> if $m\angle A < 90°$

$\angle A$ is <u>obtuse</u> if $m\angle A > 90°$

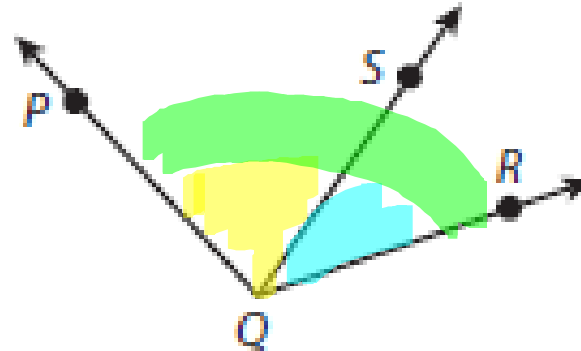$\angle A$ is <u>right</u> if $m\angle A = 90°$

$\angle A$ is <u>straight</u> if $m\angle A = 180°$

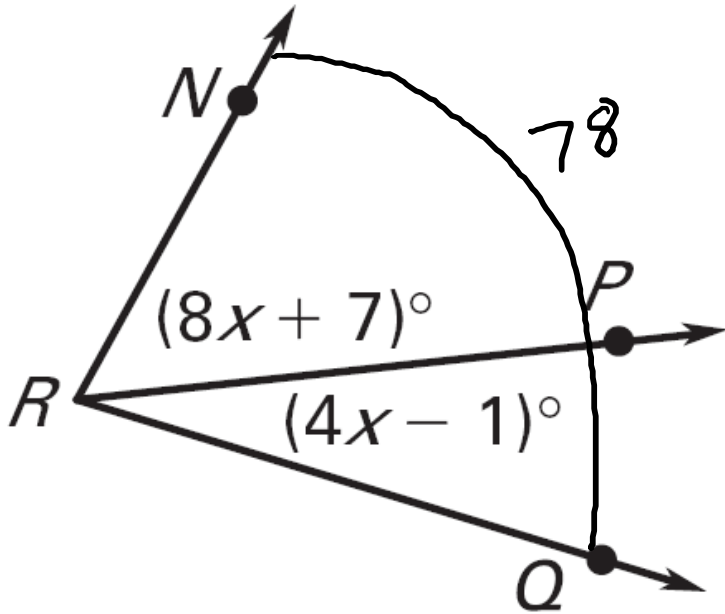<u>Pictures</u>

Postulate 2: Angle Addition Postulate

If S is in the interior of $\angle PQR$, then

$m\angle PQR = m\angle PQS + m\angle SQR.$

PART + THE REST = WHOLE THING

Ex. Given $m\angle NRQ = 78°$, find $m\angle PRQ$.

N

78

$(8x + 7)°$

P

R

$(4x - 1)°$

Q

$$8x + 7 + 4x - 1 = 78$$

$$12x + \cancel{6} = 78$$
$$ \cancel{-6} \quad -6$$

$$\frac{\cancel{12}x}{\cancel{12}} = \frac{72}{12}$$

$$x = 6$$
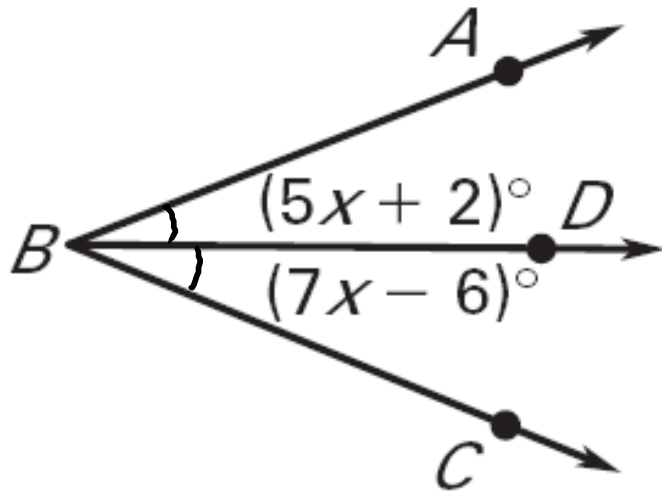
$$m\,PRQ = 4(6) - 1 = \boxed{23}$$

Def. An <u>angle bisector</u> is a ray that divides an angle into two equal parts.

P

S

Q

R
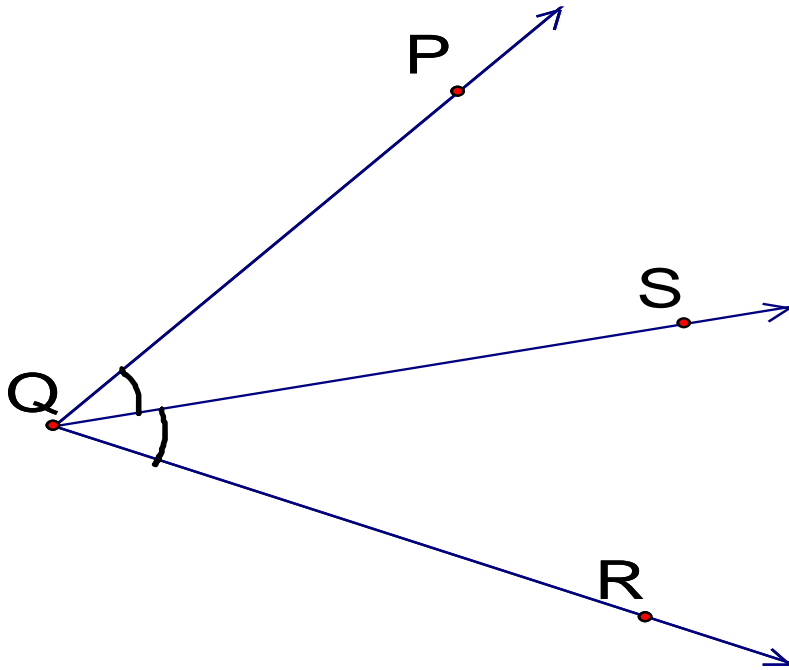
$\overrightarrow{QS}$ bisects $\angle PQR$

$m\angle PQS = m\angle SQR$

Ex. $\overrightarrow{BD}$ bisects $\angle ABC$, find $m\angle ABC$

A

B

$(5x + 2)°$ D

$(7x - 6)°$

C

$5x + 2 = 7x - 6$
$-5x \qquad -5x$

$2 = 2x - 6$
$+6 \qquad +6$

$\dfrac{8}{2} = \dfrac{2x}{2}$

$x = 4$

$m\angle ABD = 5(4) + 2 = 22$

$m\angle DBC = 7(4) - 6 = 22$

$m\angle ABC = 22 + 22 = \boxed{44}$