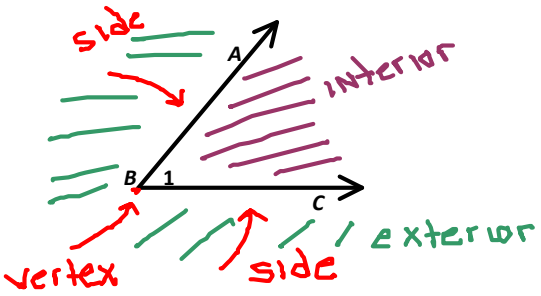
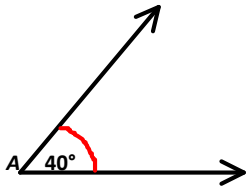
Angle Measure

Angle - A figure consisting of two noncollinear rays with a common endpoint.



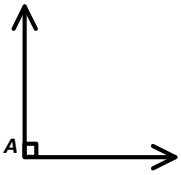
∠B
∠1
∠ABC
∠CBA

Acute Angle - An angle whose measure is between 0° and 90°.



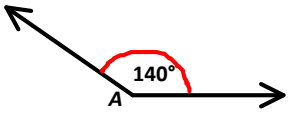
$m\angle A = 40°$

Right Angle - An angle whose measure is 90°.



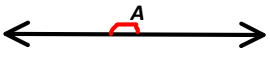
$m\angle A = 90°$

Obtuse Angle - An angle whose measure is between 90° and 180°.



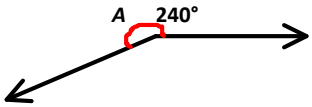
$m\angle A = 140°$

Straight Angle - An angle whose measure is 180°.



$m\angle A = 180°$

Reflex Angle - An angle whose measure is between 180° and 360°.



$m\angle A = 240^\circ$

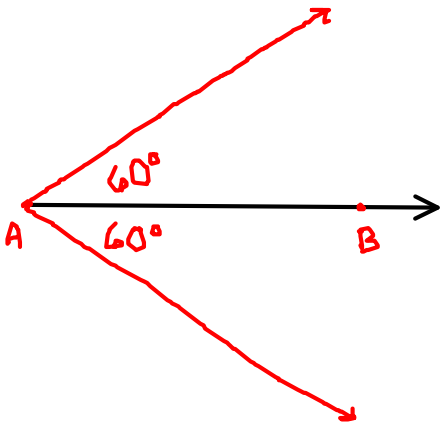
Congruent Angles - Angles that have the same measure.

$\angle A \cong \angle B$

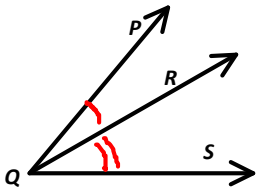
$m\angle A = m\angle B$

Protractor Postulate - Given $\overrightarrow{AB}$ and a number r between 0° and 180°, there is exactly one ray with endpoint A, extending on either side of $\overrightarrow{AB}$, such that the measure of the angle formed is r.

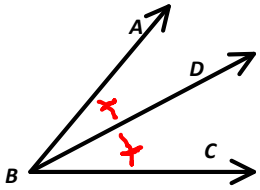
$r = 60^\circ$



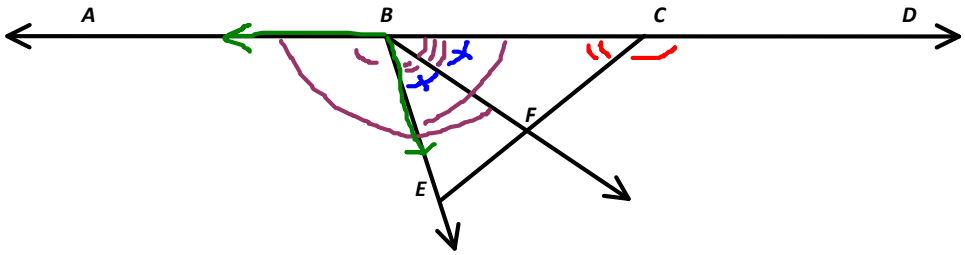
Angle Addition Postulate - If R is the interior of $\angle PQS$, then $m\angle PQR + m\angle RQS = m\angle PQS$.



Angle Bisector - $\overrightarrow{BD}$ is the bisector of $\measuredangle ABC$ if D is in the interior of the angle and $\measuredangle ABD \cong \measuredangle CBD$.

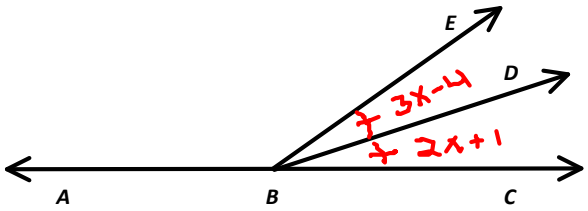


Directions: Refer to the figure below for questions 1 – 5.



1. Name two angles that have C as a vertex. ∠FCB , ∠DCF
2. If $\overrightarrow{BF}$ bisects $\measuredangle CBE$, name two congruent angles. ∠FBE , ∠CBF
3. List all the angles that have B as the vertex. ∠ABE, ∠FBE, ∠CBF, ∠CBE, ∠FBA, ∠ABC
4. Name a pair of opposite rays. $\overrightarrow{BA}$ $\overrightarrow{BD}$
5. Name the sides of $\measuredangle ABE$. $\overrightarrow{BA}$, $\overrightarrow{BE}$

Directions: Refer to the figure below for questions 6–10. $\overrightarrow{BA}$ and $\overrightarrow{BC}$ are opposite rays and $\overrightarrow{BD}$ bisects $\angle CBE$.



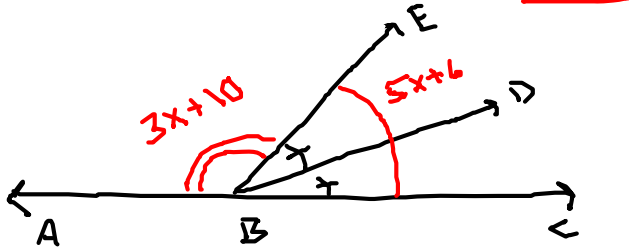
6. If $m\angle EBD = 3x-4$ and $m\angle DBC = 2x+1$, find $m\angle EBD$.

$3x-4=2x+1$
$-2x \quad -2x$
$x-4=1$
$+4 \quad +4$
$x=5$

$m\angle EBD = 3x-4$
$=3(5)-4$
$=11^\circ$

$m\angle EBD = 11^\circ$

7. If $m\angle EBC = 5x+6$ and $m\angle EBA = 3x+10$, find $m\angle EBA$.



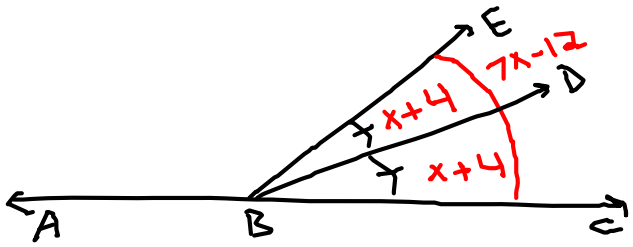
$3x+10+5x+6=180^\circ$
$8x+16=180$
$-16 \quad -16$
$\frac{8x}{8} = \frac{164}{8}$
$x=20.5$

$m\angle EBA = 3x+10$
$=3(20.5)+10$
$=61.5+10$
$=71.5$

$m\angle EBA = 71.5^\circ$

8. If $m\angle DBC = x+4$ and $m\angle EBC = 7x-12$, find $m\angle EBD$.

8. If $m\angle DBC = x+4$ and $m\angle EBC = 7x-12$, find $m\angle EBD$.



$x+4+x+4=7x-12$

$2x+8=7x-12$

$-2x \quad -2x$

$8=5x-12$

$+12 \quad +12$

$\frac{20}{5}=\frac{5x}{5}$

$x=4$

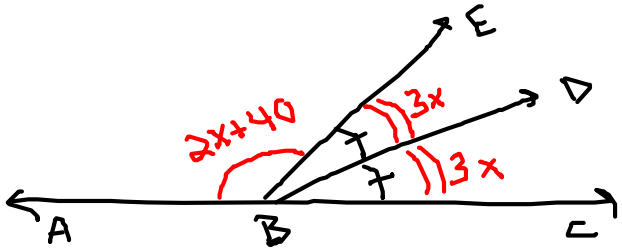
$m\angle EBD = x+4$

$= 4+4$

$= 8$

$\boxed{m\angle EBD = 8^\circ}$

9. If $m\angle ABE = 2x+40$ and $m\angle EBD = 3x$, find $m\angle ABE$.



$2x+40+3x+3x=180^\circ$

$8x+40=180$

$-40 \quad -40$

$\frac{8x}{8}=\frac{140}{8}$

$x=17.5$

$m\angle ABE = 2x+40$

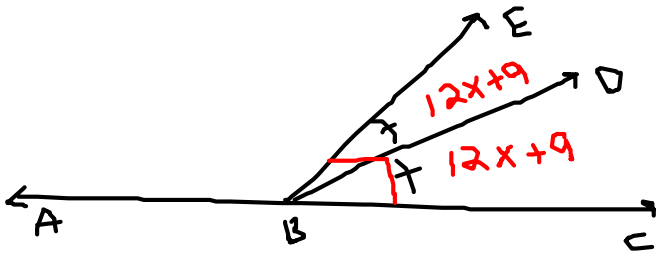
$= 2(17.5)+40$

$= 35+40$

$= 75$

$\boxed{m\angle ABE = 75^\circ}$

10. If $m\angle EBC$ is a right angle and $m\angle DBC = 12x + 9$, find $m\angle EBD$.



$12x + 9 + 12x + 9 = 90^\circ$

$24x + 18 = 90$

$-18 \quad -18$

$\frac{24x}{24} = \frac{72}{24}$

$x = 3$

$m\angle EBD = 12x + 9$

$= 12(3) + 9$

$= 36 + 9$

$= 45$

$\boxed{m\angle EBD = 45^\circ}$