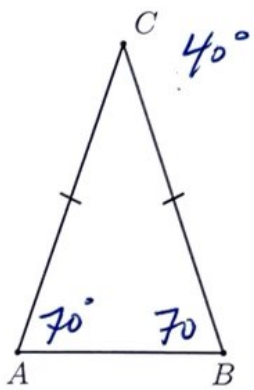
8.2 Classwork: Isosceles triangles and transversals

1. Given isosceles $\triangle ABC$ with $\overline{AC} \cong \overline{BC}$, $m\angle A = 70°$. Find $m\angle B$ and $m\angle C$.

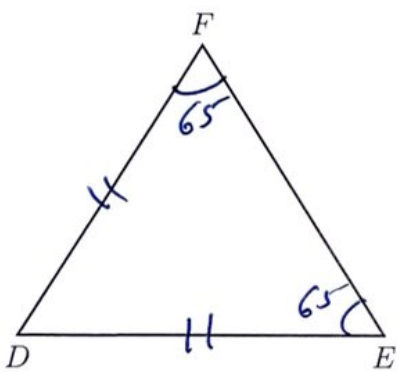
$m\angle B = m\angle A = 70°$

$m\angle C + 70 + 70 = 180$

$m\angle C = 40$



2. Shown below is isosceles $\triangle DEF$. Mark the congruent legs $\overline{DF} \cong \overline{DE}$. If $m\angle F = 65°$ then find the other two angle measures.

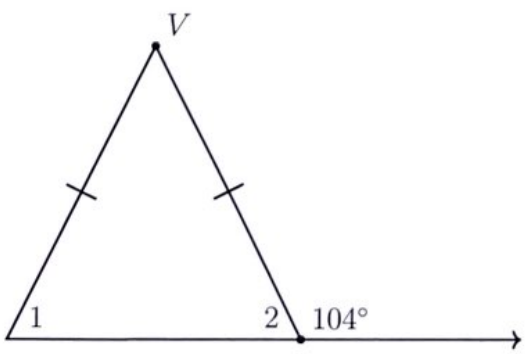


$m\angle E = 65°$

$m\angle D = 180 - (65+65)$

$= 50°$

3. Given the triangle shown with congruent sides marked and external angle measuring 104°. Find the measures of the base angles 1 and 2, and the measure of the vertex angle, $\angle V$.



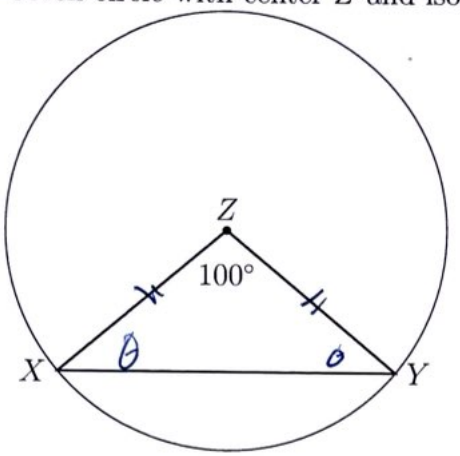
$m\angle 2 = 180 - 104 = 76$

$m\angle 1 = 76$

$m\angle V = 180 - (76+76)$

$= 28°$

4. Given circle with center Z and isosceles $\triangle XYZ$. $m\angle Z = 100$. Find $m\angle Y$.



$m\angle X = m\angle Y = \theta$

$\theta + \theta + 100 = 180$

$\theta = 40°$

$m\angle Y = 40°$

5. Given two parallel lines and a transversal, as shown, with $m\angle 6 = 70°$. Write down the value of each angle measure.

(a) $m\angle 1 =$ 110°

(b) $m\angle 2 =$ 70°

(c) $m\angle 3 =$ 70

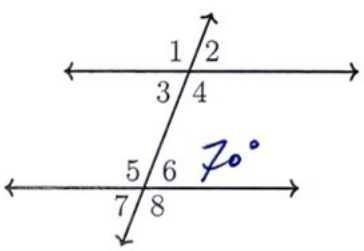
(d) $m\angle 4 =$ 110°

(e) $m\angle 5 =$ 110

(f) $m\angle 6 =$ 70°

(g) $m\angle 7 =$ 70

(h) $m\angle 8 =$ 110°



6. Given two parallel lines and a transversal, as shown. Write down each value, given that $m\angle 5 = 120°$.

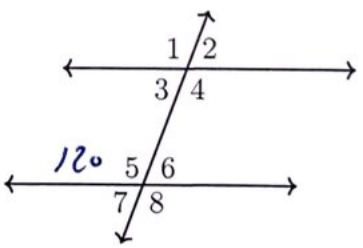
(a) $m\angle 3 =$ 60°

(b) $m\angle 2 =$ 60°

(c) $m\angle 4 = 2x$. Find x

$m\angle 4 = 120 = 2x$

$x = 60°$

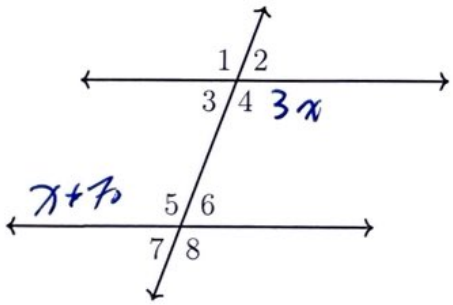


7. Given two parallel lines and a transversal, with $m\angle 4 = 3x$ and $m\angle 5 = x + 70$. Write an equation, then solve for x.

$\angle 5 \cong \angle 4$

$x + 70 = 3x$

$x = 35$

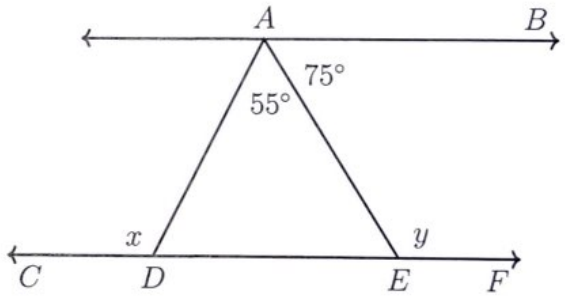


8. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CF}$, $m\angle BAE = 75°$ and $m\angle DAE = 55°$.

Find $m\angle ADC = x$ and $m\angle AEF = y$.

$x = 55 + 75 = 130°$

$y = 180 - 75 = 105°$



9. Two parallel lines intersect a transversal. Given corresponding angles $m\angle 1 = 4.4x - 63$ and $m\angle 2 = 2.8x + 9$, find the measure of $\angle 1$.

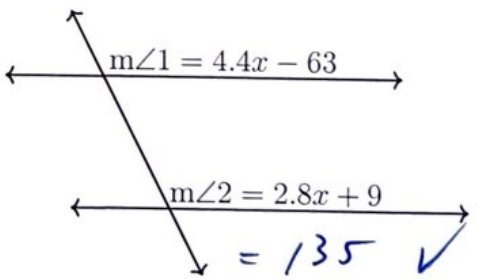
$\angle 1 \cong \angle 2$

$4.4x - 63 = 2.8x + 9$

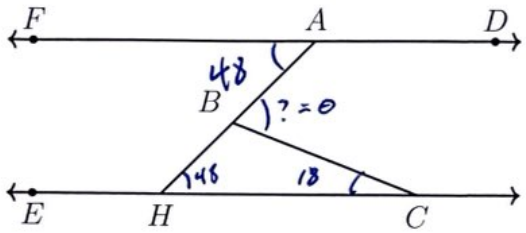
$1.6x = 72$

$x = 45°$

$m\angle 1 = 4.4(45°) - 63 = 135$



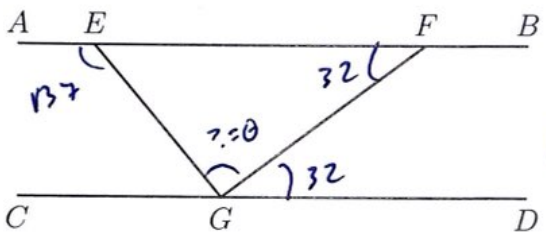
10. In the diagram below, $\overline{FAD} \parallel \overline{EHC}$, and $\overline{ABH}$ and $\overline{BC}$ are drawn.



If $m\angle FAB = 48°$ and $m\angle ECB = 18°$, what is $m\angle ABC$?

(a) 18°
(b) 48°
(c) 66°
(d) 114°

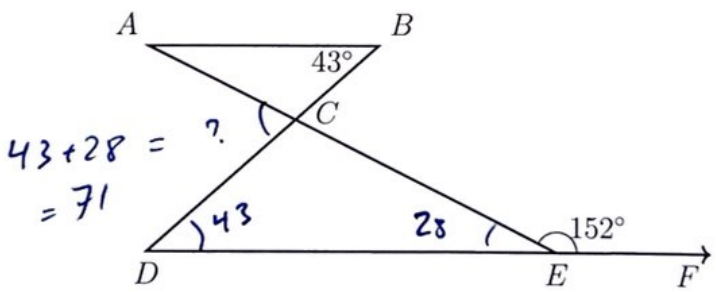
11. In the diagram below, $\overline{AEFB} \parallel \overline{CGD}$, and $\overline{GE}$ and $\overline{GF}$ are drawn.



If $m\angle EFG = 32°$ and $m\angle AEG = 137°$, what is $m\angle EGF$?

(a) 11°
(b) 43°
(c) 75°
(d) 105°

12. In the diagram below, $\overline{AB} \parallel \overline{DEF}$, $\overline{AB}$ and $\overline{BD}$ intersect at C, $m\angle B = 43°$, and $m\angle CEF = 152°$.



Which statement is true?

(a) $m\angle D = 28°$
(b) $m\angle A = 43°$
(c) $m\angle ACD = 71°$
(d) $m\angle BCE = 109°$