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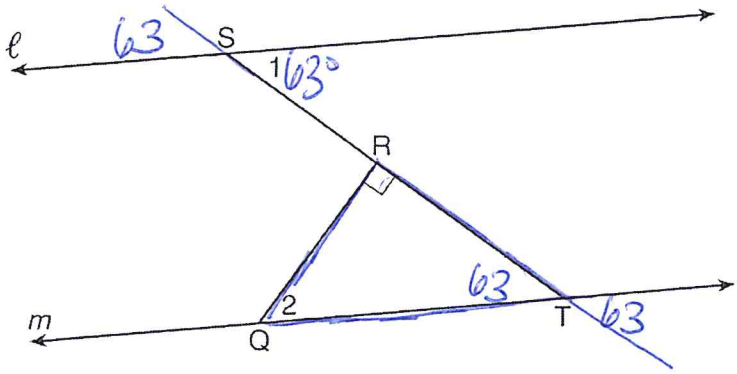
Date _____
Geometry

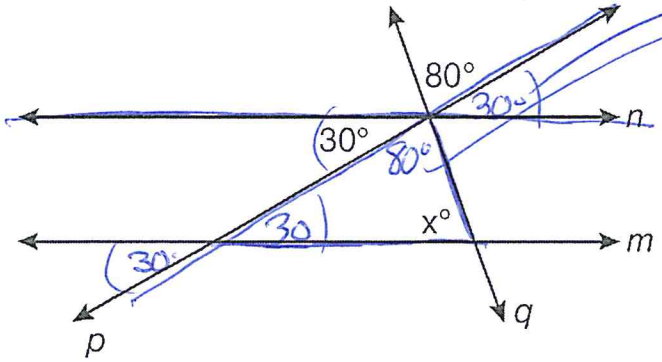
Parallel Lines With Triangles

1. In the diagram below, $\ell \parallel m$ and $\overline{QR} \perp \overline{ST}$
If $m\angle 1 = 63$, find $m\angle 2$.



ΔQRT
$90 + 63 + x = 180$
$153 + x = 180$
$-153 \quad -153$
$x = 27°$

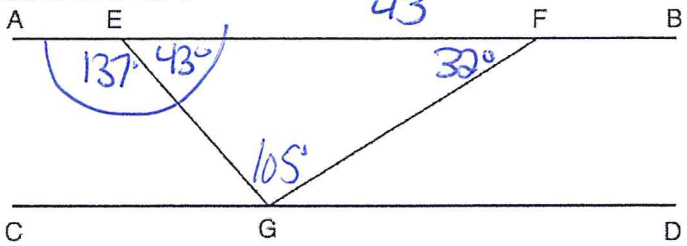
2. In the diagram below, lines n and m are cut by transversals p and q.
What value of x would make lines n and m parallel?



Vertical angles are congruent
$80 + 30 + x = 180$
$110 + x = 180$
$-110 \quad -110$
$x = 70°$

3. 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 $m\angle EGF$?

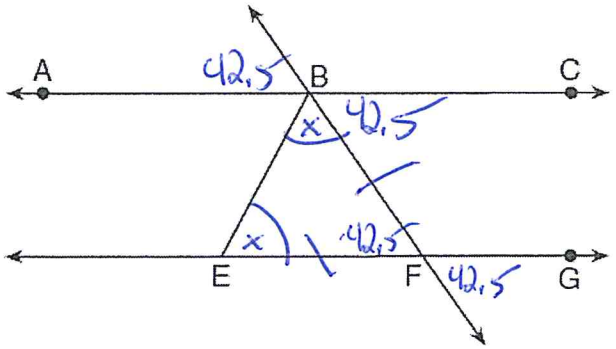
1) 11°
2) 43°
3) 75°
4) 105°



180
−137
43

ΔEFG
$43 + 32 + x = 180$
$75 + x = 180$
$-75 \quad -75$
$x = 105°$

4. As shown in the diagram below, $\overleftrightarrow{ABC} \parallel \overleftrightarrow{EFG}$ and $\overline{BF} \cong \overline{EF}$.
If $m\angle CBF = 42.5°$, find $m\angle EBF$.



$x + x + 42.5 = 180$

$2x + 42.5 = 180$

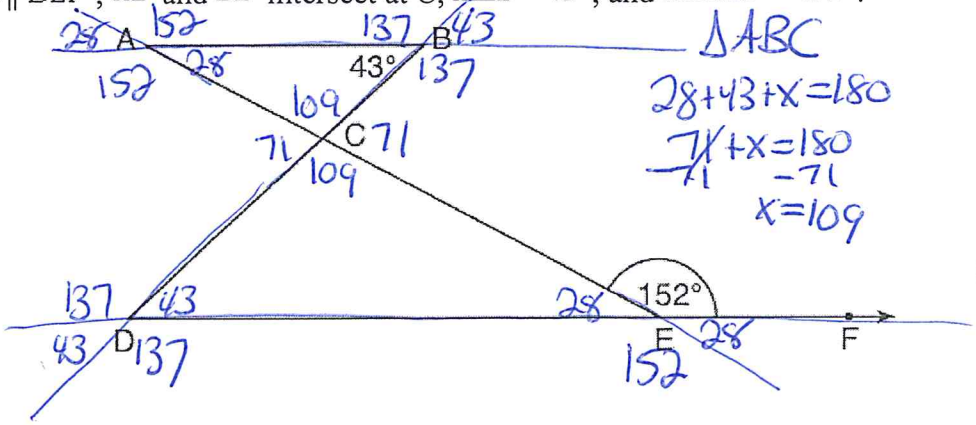
$-42.5 \quad -42.5$

$\frac{2x}{2} = \frac{137.5}{2}$

$x = 68.75$

5. In the diagram below, $\overline{AB} \parallel \overrightarrow{DEF}$, $\overline{AE}$ and $\overline{BD}$ intersect at C, $m\angle B = 43°$, and $m\angle CEF = 152°$.
Which statement is true?

1) $m\angle D = 28°$ ✗
2) $m\angle A = 43°$ ✗
3) $m\angle ACD = 71°$ ✓
4) $m\angle BCE = 109°$ ✗



$\triangle ABC$

$28 + 43 + x = 180$

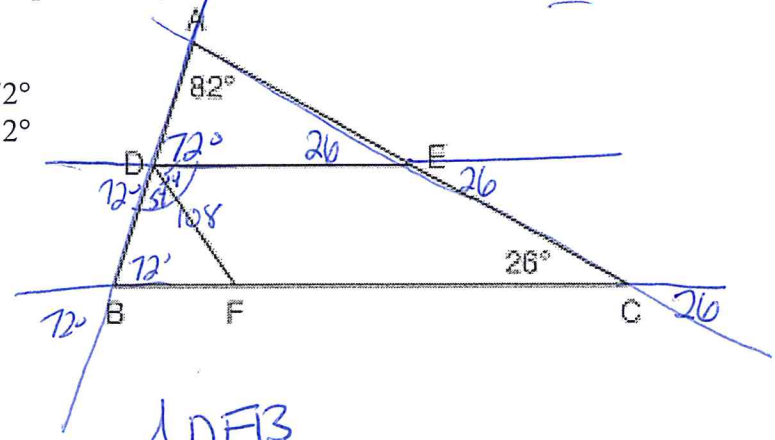
$71 + x = 180$

$-71 \quad -71$

$x = 109$

6. In the diagram below, $\overline{DE}$ divides $\overline{AB}$ and $\overline{AC}$ proportionally, $m\angle C = 26°$, $m\angle A = 82°$, and $\overline{DF}$ bisects $\angle BDE$.
The measure of angle DFB is

1) 36°
2) 54°
3) 72°
4) 82°



$\triangle ADE$

$82 + 26 + x = 180$

$108 + x = 180$

$-108 \quad -108$

$x = 72$

$\triangle DFB$

$54 + 72 + x = 180$

$126 + x = 180$

$-126 \quad -126$

$x = 54$