Key
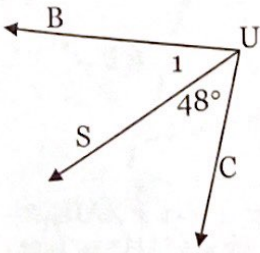
Angle Relationships: Mixed Review Homework#1

1. Find m∠1 if m∠CUB = 78.
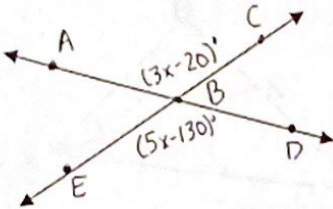
$\angle 1 + \angle SUC = \angle BUC$ Angle Addition

$\angle 1 + 48 = 78$

$\boxed{\angle 1 = 30°}$

2. Find x.

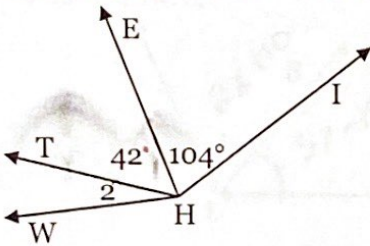$\angle ABC \cong \angle EBD$ vertical ∠s are ≅

$3x - 20 = 5x - 130$

$110° = 2x$

$\boxed{55 = x}$

3. Find m∠2 if m∠WHI = 160.

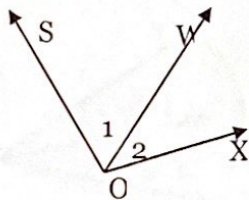$\angle 2 + \angle THE + \angle EHI = \angle WHI$ angle addition

$\angle 2 + 42 + 104 = 160°$

$\angle 2 + 146 = 160$

$\boxed{\angle 2 = 14°}$

4. m∠SOX = 160
m∠1 = x + 14
m∠2 = 3x – 10
Find m∠2

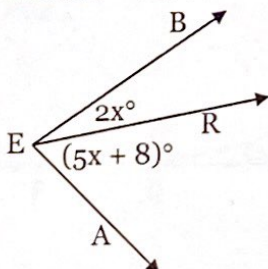$\angle SOX = \angle 1 + \angle 2$ angle addition

$160 = x + 14 + 3x - 10$

$160 = 4x + 4$

$156 = 4x$

$39 = x$

$\angle 2 = 3(39) - 10$

$\boxed{\angle 2 = 107°}$

5. m∠BEA = 71. Find m∠REA.

$\angle REA + \angle REB = \angle BEA$ angle addition
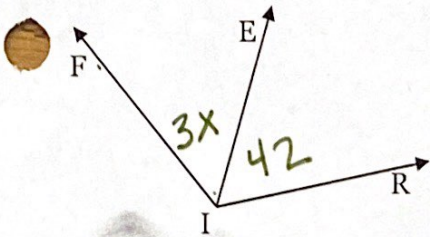
$5x + 8 + 2x = 71$

$7x + 8 = 71$

$7x = 63$

$x = 9$

$\angle REA = 5(9) + 8$

$\boxed{\angle REA = 53°}$

6. m∠FIE = 3x, m∠RIE = 42°, m∠FIR = 5x
   Find m∠FIR.

∠FIE + ∠RIE = ∠FIR   Angle Addition
$3x + 42 = 5x$
$42 = 2x$
$21 = x$

∠FIR = 5(21)
$\boxed{∠FIR = 105°}$

7. m∠HAK = 4x − 2, m∠KAW = 2x − 5,
   and m∠HAW = 77.
   Find m∠HAK and m∠KAW.
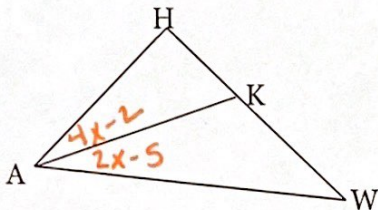
∠HAK + ∠KAW = ∠HAW   Angle Addition
$4x - 2 + 2x - 5 = 77$
$6x - 7 = 77$
$6x = 84$
$x = 14$

∠HAK = 4(14) − 2
$\boxed{∠HAK = 54°}$
∠KAW = 2(14) − 5
$\boxed{∠KAW = 23°}$

8. $\overrightarrow{US}$ bisects ∠BUL, m∠BUS = 2x + 10,
   and m∠SUL = 3x − 18.
   Find m∠BUL.
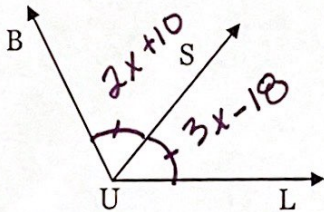
∠BUS ≅ ∠SUL   def of angle bisector
$2x + 10 = 3x - 18$
$28 = x$

∠BUL = ∠BUS + ∠SUL   angle addition
∠BUL = 2(28) + 10 + 3(28) − 18
$\boxed{m∠BUL = 132°}$

9. m∠TRI = 3x − 5, m∠IRB = x + 27,
   and m∠TRB = 86.
   Does $\overrightarrow{RI}$ bisect ∠TRB?
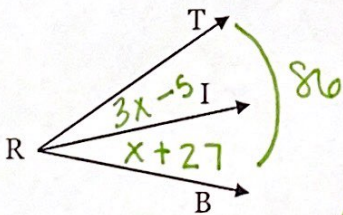
∠TRI + ∠IRB = ∠TRB   angle Add.
$3x - 5 + x + 27 = 86$
$4x + 22 = 86$
$4x = 64$
$x = 16$

∠TRI = 3(16) − 5
∠TRI = 43°
∠IRB = 16 + 27
∠IRB = 43°

Yes, ∠TRI ≅ ∠IRB so RI BISECTS ∠TRB

10. Find x.

∠PQR + ∠RQT = 180°   linear pairs are suppl.
$7x + 3 + 2x + 15 = 180$
$9x + 18 = 180$
$9x = 162$
$\boxed{x = 18}$