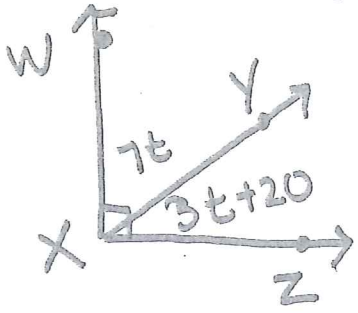
Basic Examples

<∠WXY

1.) Find t and ∠YXZ if m∠WXZ is a right Angle.



Geo:

∠WXZ = 90°

∠WXY + ∠YXZ = ∠WXZ

7t + 3t + 20 = 90°

10t + 20 = 90°

10t = 70

t = 7

Justify:

def of right ∠

angle addition

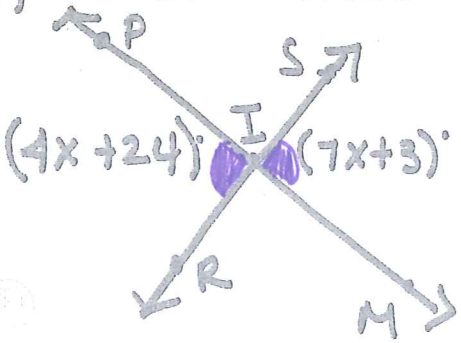
∠YXZ = 3(7) + 20

m∠YXZ = 41°

∠WXY = 7(7) = 49°

m∠WXY = 49°

2.) Find x and the m∠PIR and m∠MIR.



∠PIR ≅ ∠SIM

vertical ∠s are ≅

4x + 24 = 7x + 3

−4x −4x

24 = 3x + 3

−3 −3

21 = 3x

7 = x

∠PIR = 4(7) + 24

∠PIR = 52°

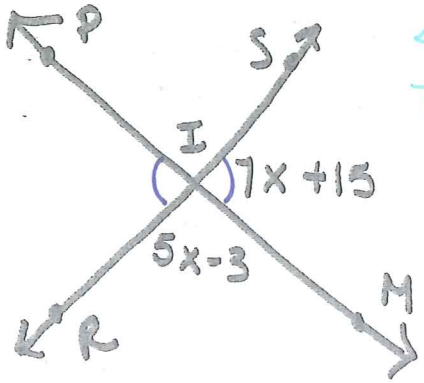
∠PIR + ∠MIR = 180

linear pairs are suppl.

52 + ∠MIR = 180

∠MIR = 128°

3.) Find x and m∠PIR, ∠MIR and m∠SIP.



∠SIM + ∠MIR = 180°

linear pairs are Suppl.

7x + 15 + 5x − 3 = 180°

12x + 12 = 180

12x = 168

x = 14

∠SIM ≅ ∠PIR

7(14) + 15 = ∠PIR

113° = ∠PIR

∠MIR = 5(14) − 3

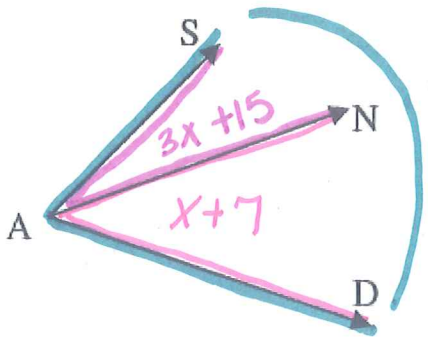
∠MIR = 67°

∠SIP ≅ ∠MIR

vertical ∠s are ≅

∠SIP = 67°

4. Find x and the $m\angle SAN$ if $m\angle SAD = 94°, m\angle SAN = 3x + 15, and\ m\angle DAN = x + 7.$



Geometry:

$94° = \angle SAN + \angle DAN = \angle SAD$

$3x+15+x+7=94$

$4x+22=94$

$4x=72$

$\boxed{x=18}$

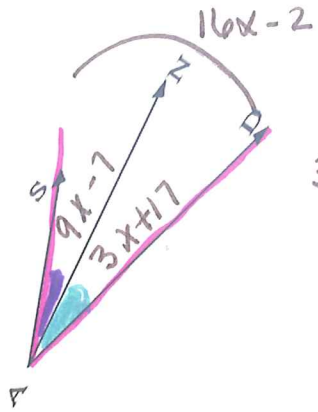
$m\angle SAN = 3(18)+15$

$m\angle SAN = 69°$

Justification:

Angle Addition

5. Find x and the $m\angle SAD$ if $m\angle SAD = 16x - 2, m\angle SAN = 9x - 7, and\ m\angle DAN = 3x + 17.$



Geometry:

$\angle DAN + \angle SAN = \angle SAD$

$3x+17+9x-7 = 16x-2$

$12x+10=16x-2$

$-12x \quad -12x$

$10 = 4x-2$

$+2 \quad +2$

$12=4x$

$\boxed{3=x}$

$m\angle SAD = 16(3)-2$

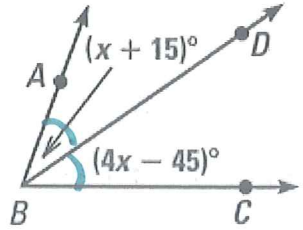
$m\angle SAD = 46°$

Justification:

Angle addition

$\angle ABC$

6. Find x and the $m\angle SAD$ if RAY BD is an angle bisector.



$\angle ABD \cong \angle CBD$ — def of $\angle$ bisector

$x+15 = 4x-45$

$15 = 3x-45$

$+45 \quad +45$

$60=3x$

$\boxed{20=x}$

$\angle ABC = \angle ABD + \angle DBC$ — Angle addition

$\angle ABC = 20+15+4(20)-45$

$\angle ABC = 70°$

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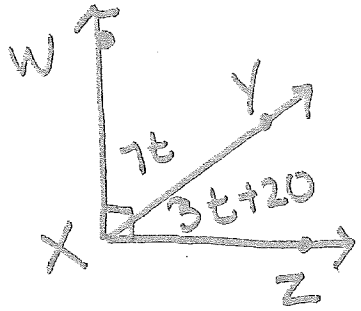
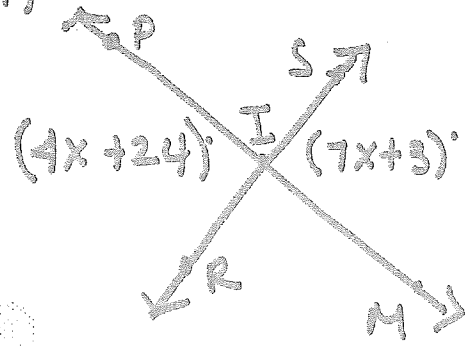
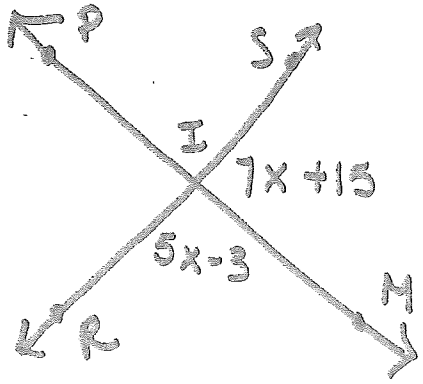


2.) Find x and the $m\angle PIR$ and $m\angle MIR$.



3.) Find x and $m\angle PIR$, $\angle MIR$ and $m\angle SIP$.



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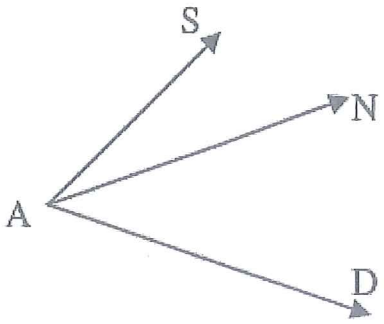

Geometry: Justification:

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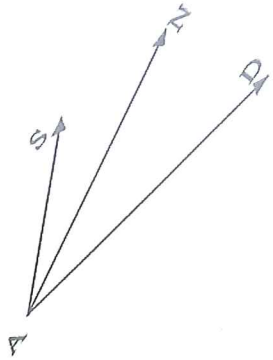
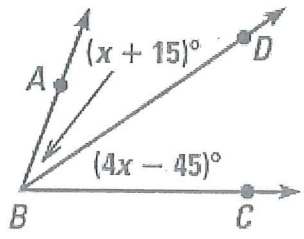
Geometry: Justification:



∠ABC

6. Find x and the $m\angle SAD$ if RAY BD is an angle bisector.