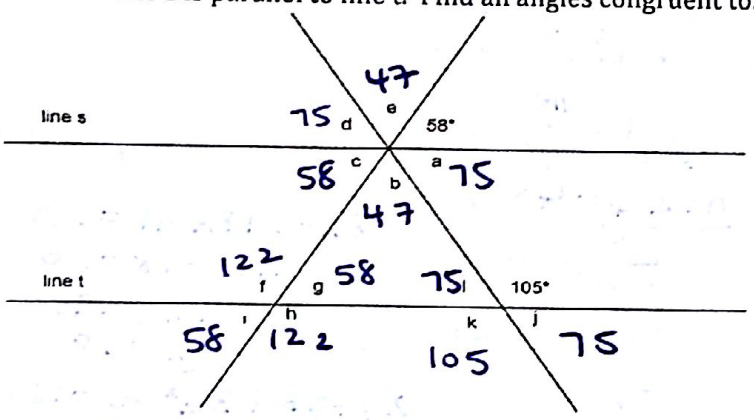
Test 3 Review: Geometry GT

This test will cover the following material

- Angle relationships given parallel lines cut by a transversal
- Algebraic Proofs
- Geometric proofs involving
  - Segment addition postulate
  - Angle addition postulate
  - Parallel lines cut by a transversal
    - Vertical angles theorem
    - Alternate interior angles theorem
    - Alternate exterior angles theorem
    - Consecutive interior angles theorem
- Finding missing angles given parallel lines and transversals
- Constructions of parallel lines and perpendicular transversals

Practice Problems:

1. Given line s is parallel to line t. Find all angles congruent to∠ a.

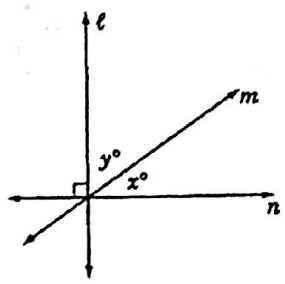


$\angle a \cong \angle l$

$\angle a \cong \angle j$

$\angle a \cong \angle d$

2. Complete the multiple choice problem.



). In the figure above, $\ell \perp n$ and x is 20° less than y. What is the value of x?

(A) 35 (B) 45 (C) 55
(D) 80 (E) 100

$x = y - 20$

$y + x = 90$

$y + (y - 20) = 90$

$2y - 20 = 90$

$2y = 110$

$y = 55$

$x = 55 - 20$

$x = 35$

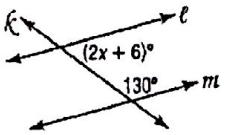
3. Algebraic proof

Given: 4(x-3)=2x+1

Prove: x= 13/2

See attached

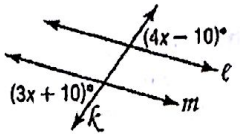
4. Find x in each so that $l \| m$.



$2x+6=50$

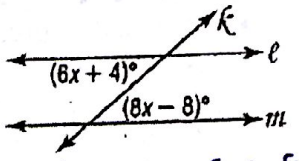
$2x=44$

$x=22$



$3x+10=4x-10$

$20=x$



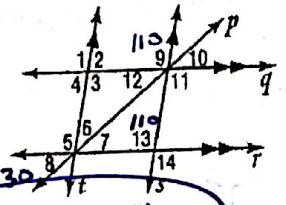
$6x+4=8x-8$

$12=2x$

$6=x$

7.

If $m\angle 9 = 110$ and $m\angle 8 = 30$, find $m\angle 6$.



$m\angle 13=110$

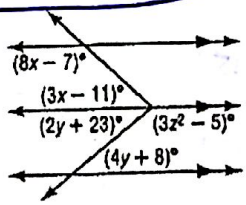
$m\angle 7=30$

$m\angle 6+m\angle 7=70$

$m\angle 6+30=70$

$m\angle 6=40$

Find x, y, and z in the figure.



$2y+23=4y+8$

$15=2y$

$7.5=y$

$8x-7+3x-11=180$

$11x-18=180$

$11x=198$

$x=18$

$2y+23+3z^2-5=180$

$2(7.5)+18+3z^2=180$

$15+18+3z^2=180$

$33+3z^2=180$

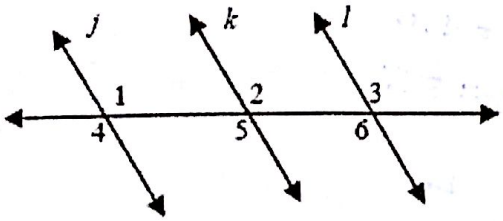
$3z^2=147$

$z^2=$

8. Prove: Vertical angles theorem, Alternate interior angles theorem, Alternate exterior angles theorem or Consecutive interior angles theorem.

9. Given: parallel lines a and b, with transversal line p and q

Prove: angle 4 is congruent to angle 3



#3.

Given: $4(x-3) = 2x+1$

Prove: $x = 13/2$

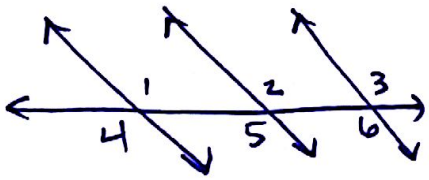
Statements	Reasons
1. $4(x-3) = 2x+1$	1. given
2. $4x-12 = 2x+1$	2. distributive property
3. $4x = 2x+13$	3. addition property of equality
4. $2x = 13$	4. subtraction property of equality
5. $x = \frac{13}{2}$	5. division property of equality.

#8: see notes on these proofs.

#9.

Given: $j \parallel k$ and $k \parallel l$

Prove: $\angle 4 \cong \angle 3$



Statements	Reasons
1. $j \parallel k$ $k \parallel l$	1. given
2. $\angle 4 \cong \angle 1$	2. vertical angle thm
3. $\angle 1 \cong \angle 2$	3. corresponding angles ~~thm~~ post.
4. $\angle 2 \cong \angle 3$	4. corresponding angles post.
5. $\angle 4 \cong \angle 3$	5. transitive property.