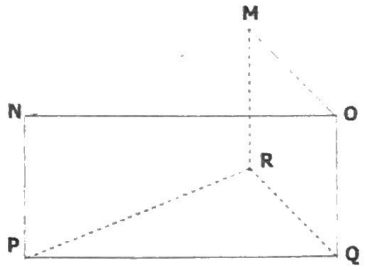
# Parallel Lines and Transversals

Name _____ Period _____

**I. Refer to the figure at right.**



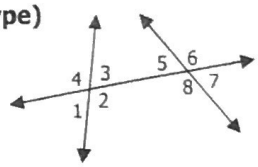

1) Name two more pairs of parallel segments.

2) Name two more segments skew to NM

3) Name two transversals for parallel lines NO and PQ

4) Name a segment that is parallel to plane MRQ.

**II. Identify the angles that go with the following types. (give all angles for each type)**

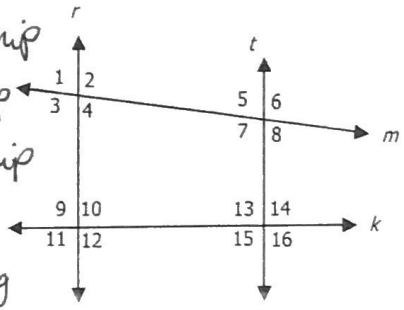



5) Corresponding angles 6) Alternate exterior angles

7) Consecutive interior angles 8) Alternate interior angles

lines are not parallel — no angle relationships apply!

**III. Using the figure below, state the transversal that forms each pair of angles. Then identify the special name for the angle pair.**




9) ∠1 and ∠12 transversal = r special name = ~~AIA~~ relationship

10) ∠2 and ∠10 transversal = r special name = No relationship

11) ∠4 and ∠9 transversal = r special name = No relationship

12) ∠6 and ∠3 transversal = m special name = alt. Ext. ∠

13) ∠14 and ∠10 transversal = K special name = Corresponding

14) ∠7 and ∠13 transversal = m special name = Corresponding

**IV. The three-dimensional figure shown below is called a right pentagonal prism.**

15) Identify all segments in plane JIH that appear to be skew to EB.

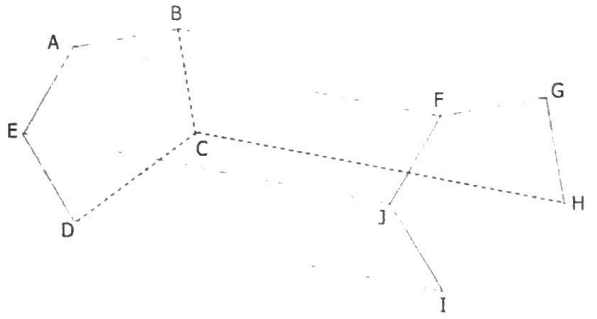
16) Which segments seem parallel to BG?

17) Which segments seem parallel to GH?

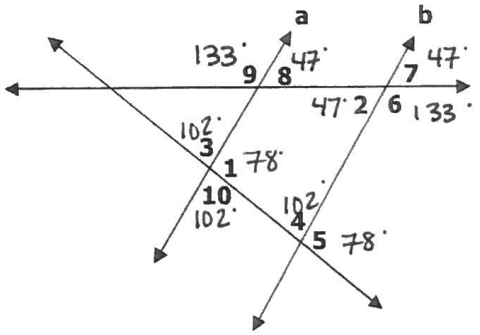
18) Identify all planes that appear parallel to plane FGH.

19) Name four segments skew to CD.

20) Name four segments skew to DI.




In figure below $a \parallel b$, $m\angle 1 = 78°$, and $m\angle 2 = 47°$.
Find measure of each angle.




21) ∠3 22) ∠4

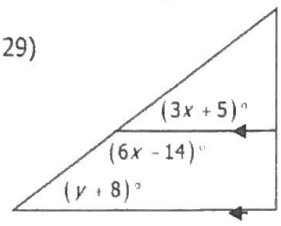
23) ∠5 24) ∠6

25) ∠7 26) ∠8

27) ∠9 28) ∠10

Find the missing values of x and y.

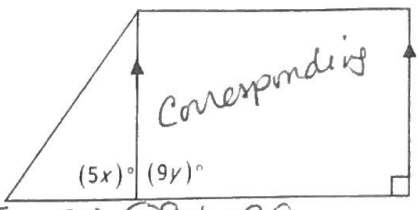
29)




① Linear pair
$3x+5+6x-14=180$
$9x-9=180$
$9x=189$
$x=21$

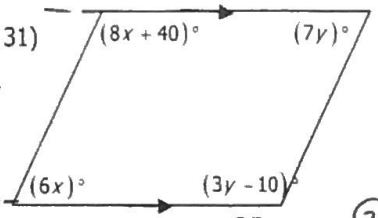
② Corresponding
$3(21)+5=68$
$y+8=68$
$y=60°$

30)




① $5x=90$ ② $9y=90$
$x=18°$ $y=10°$

31)

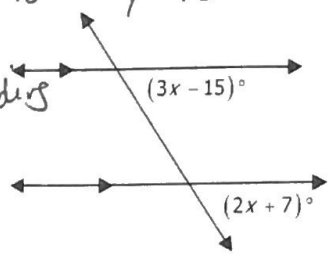



Same side interior

① $8x+40+6x=180$
$14x=140$ $x=10$

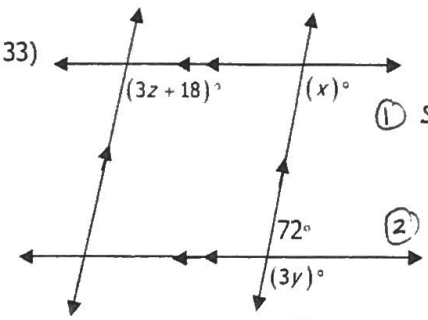
② $7y+3y-10=180$
$10y=190$
$y=19$

32)




Corresponding
$3x-15=2x+7$
$x=22$

33)

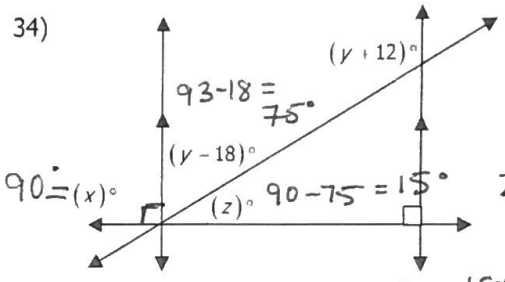



① same side
$x+72=180$
$x=108°$

② Corresponding
$108=3y$
$36=y$

③ Corresponding
$3z+18=108$
$3z=90$ $z=30°$

34)

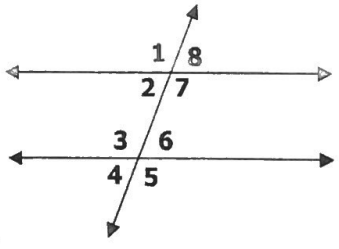



$z=15°$

$y-18+y+12=180$
$2y-6=180$
$2y=186$
$y=93°$

In the figure, $l \parallel m$. Find the measure of each angle. Each problem is different.

Parallel lines all angles apply.




AI = alt. int.
AE = alt. ext.
Cor = Corresponding
SSI = same side int.
SSE = same side ext.

35) If $m\angle 7 = 100°$, then $m\angle 3 =$ 100° AI.

36) If $m\angle 7 = 175°$, then $m\angle 6 =$ 5° S.S.

37) If $m\angle 7 = 120°$, then $m\angle 5 =$ 120° Cor.

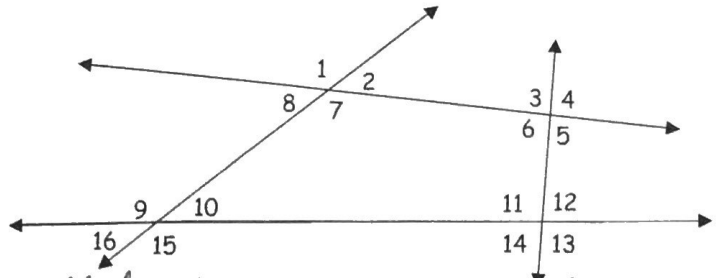
38) If $m\angle 4 = 20°$, then $m\angle 7 =$ 160° AE/linear pair

39) If $m\angle 3 = 140°$, then $m\angle 8 =$ 40° AI / linear pair

40) If $m\angle 4 = 30°$, then $m\angle 1 =$ 150° SSE

41) If $m\angle 4 = 40°$, then $m\angle 2 =$ 40° Corresponding

42) If $m\angle 7 = 125°$, then $m\angle 4 =$ 55° AI/linear pair




no lines are parallel ⇒ No angle relationships

Use the picture above to identify the special name for the angle pairs.

43) ∠2 and ∠6 none

44) ∠1 and ∠9 _____

45) ∠9 and ∠6 _____

46) ∠9 and ∠13 _____

47) ∠14 and ∠16 _____

48) ∠10 and ∠16 Vertical

49) ∠2 and ∠1 linear pair

50) ∠10 and ∠14 none

51) ∠11 and ∠6 _____

52) ∠15 and ∠11 _____

53) ∠4 and ∠13 _____

54) ∠3 and ∠11 none

I. If $m\angle 2 = 58°$ and $m\angle 13 = 111°$, then find the missing angle measures. x ll m, z ll y

55) $m\angle 1 =$ 122°

56) $m\angle 2 =$ 58°

57) $m\angle 3 =$ 69°

58) $m\angle 4 =$ 111°

59) $m\angle 5 =$ 58°

60) $m\angle 6 =$ 53°

61) $m\angle 7 =$ 69°

62) $m\angle 8 =$ 58°

63) $m\angle 9 =$ 53°

64) $m\angle 10 =$ 69°

65) $m\angle 11 =$ 58°

66) $m\angle 12 =$ 122°

67) $m\angle 13 =$ 111°

68) $m\angle 14 =$ 69°

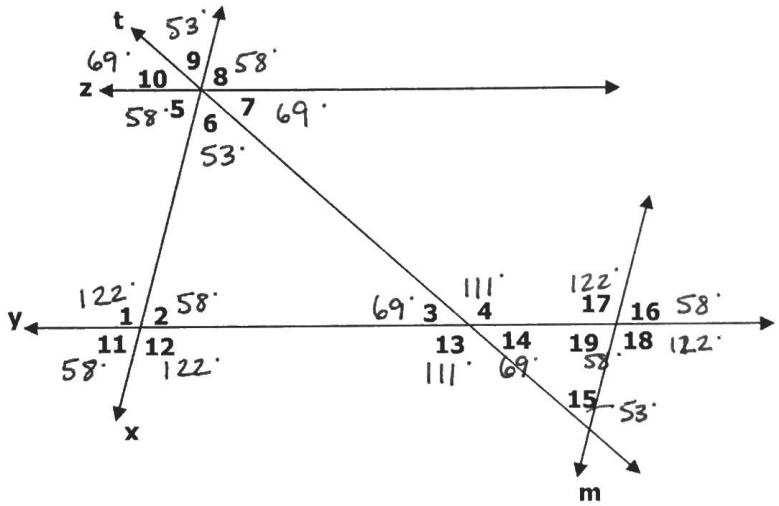
*69) $m\angle 15 =$ 53°

70) $m\angle 16 =$ 58° (16-19 look at line x and m)

71) $m\angle 17 =$ 122°

72) $m\angle 18 =$ 122°

73) $m\angle 19 =$ 58°




$\Delta = \angle 15 + \angle 14 + \angle 19 = 180$

$x + 69 + 58 = 180$

$x = 53°$