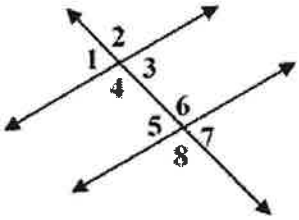
Name: _____ Class: _____ Date: _____ ID: A

Topic 2: Parallel and Perpendicular Lines Study Guide

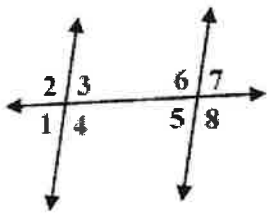
1. What are the pairs of Correspnding angles?



∠1 and ∠5
∠4 and ∠8
∠2 and ∠6
∠3 and ∠7

all

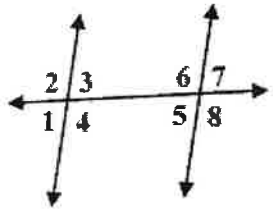
2. Which angle forms a pair of alternate exterior angles with ∠2?



∠8

(1)

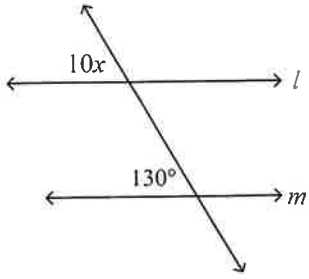
3. Which angle is Same-Side Interior to ∠3?



∠6

(1)

4. Find the value of x. $l \parallel m$. The diagram is not to scale.



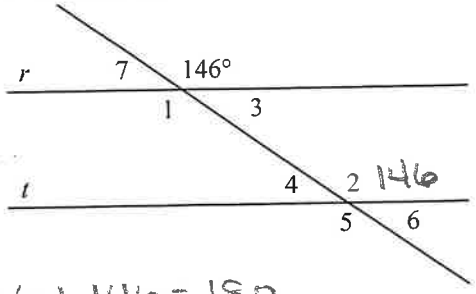
Corresponding

$10x = 130$

$x = 13$

(1)

5. Line r is parallel to line t. Find $m\angle 6$. The diagram is not to scale.

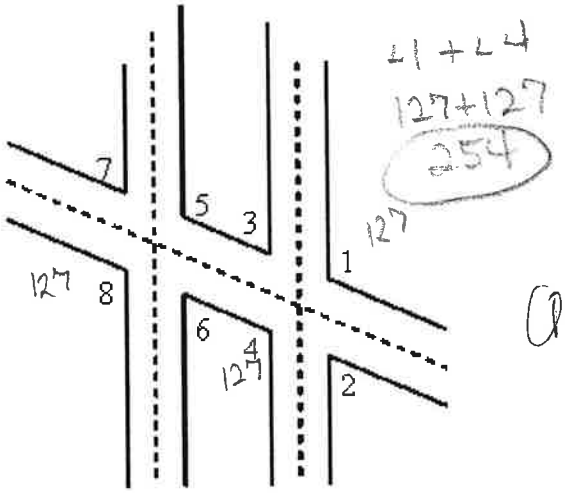


$\angle 6 + 146 = 180$

$\angle 6 = 34°$

(1)

This diagram of airport runway intersections shows two parallel runways. A taxiway crosses both runways.



∠1 + ∠4
127 + 127
254

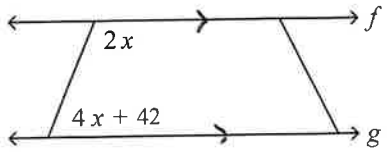
(1)

6. If ∠8 measures 127, what is the sum of the measures of ∠1 and ∠4?

254

Name: _____ ID: A

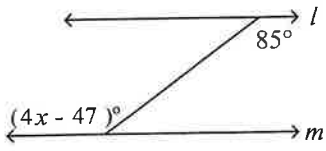
7. The expressions in the figure below represent the measures of two angles. Find the value of x. $f \parallel g$. The diagram is not to scale.



$4x+42+2x = 180$
$6x+42 = 180$
$6x = 138$
$x = 23°$ (1)

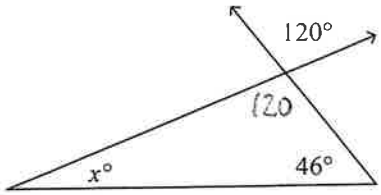
Extra shot if find 2x

8. Find the value of x for which l is parallel to m. The diagram is not to scale.



$4x-47 = 85$
$4x = 132$
$x = 33°$ (1)

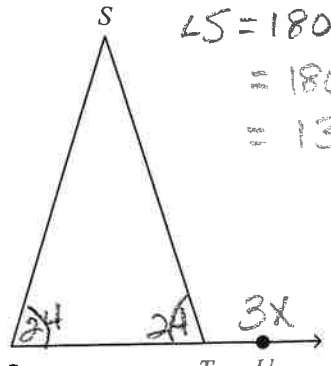
9. Find the value of x. The diagram is not to scale.



$x + 120 + 46 = 180$
$x + 166 = 180$
$x = 14°$ (1)

10. Find the value of x. The diagram is not to scale.

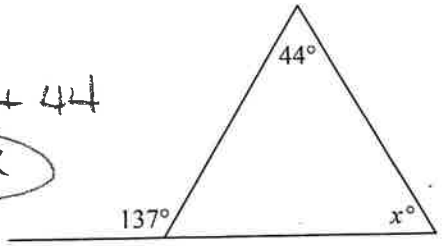
Given: $\angle SRT \cong \angle STR$, $m\angle SRT = 24$, $m\angle STU = 3x$



$\angle S = 180 - 2(24)$
$= 180 - 48$
$= 132$ (1)

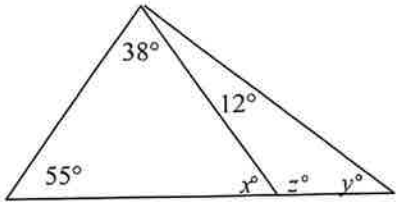
$3x = 24 + 132$
$3x = 156$
$x = 52°$

11. Find the value of x. The diagram is not to scale.



$137 = x + 44$
$93 = x$ (1)

12. Find the values of x, y, and z. The diagram is not to scale.



$x° + 55 + 38 = 180$
$x + 93 = 180$
$x = 87°$

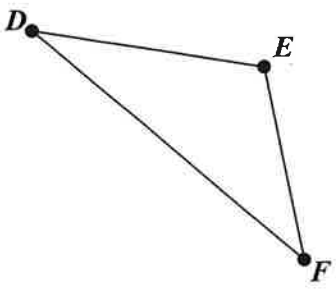
$\angle x + \angle z = 180$
$87 + \angle z = 180$
$\angle z = 93°$

$\angle y + 93 + 12 = 180$
$\angle y + 105 = 180$
$\angle y = 75°$

3 shots 1 apiece

Name: _____ ID: A

13. Which best describes how to find $m\angle E$?

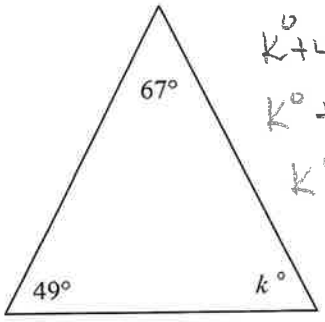


180 − (∠D + ∠F) = ∠E

D

A. Add 180 to the sum of $m\angle D$ and $m\angle F$.
B. Subtract the sum of $m\angle D$ and $m\angle F$ from 180.
C. Find the sum of $m\angle D$ and $m\angle F$.
D. Subtract 180 from the difference of $m\angle D$ and $m\angle F$.

14. Find the value of k. The diagram is not to scale.



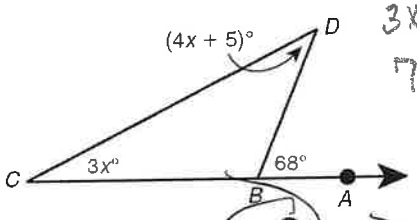
$K° + 49 + 67 = 180$

$K° + 116 = 180$

$K° = 64$

1

15. What is the value of $<d$? The diagram is not to scale.



$3x + 4x + 5 = 68$

$7x + 5 = 68$

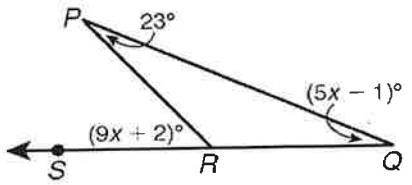
$7x = 63$

$x = 9°$

$4(9) + 5 = 41°$

1

16. What is $m\angle B$? The diagram is not to scale.



$9x + 2 = 5x - 1 + 23$

$9x + 2 = 5x + 22$

$4x = 20$

$x = 5$

$SRP = 9(5) + 2$

$= 45 + 2$

$= 47$

1

17. Which two lines are parallel?

I. $5y = -4x - 5$
II. $5y = -3 + 2x$
III. $5y + 4x = -1$

$y = -\frac{4}{5}x - 1$

$y = -\frac{3}{5} + \frac{2}{5}x$

$5y = -4x - 1$

$y = -\frac{4}{5}x - \frac{1}{5}$

1

A. I and II
B. I and III
C. II and III
D. No two of the lines are parallel.

18. Is the line through points $P(9, -1)$ and $Q(-7, 4)$ parallel to the line through points $R(0, 2)$ and $S(1, -2)$? Explain.

$m = \frac{4 - -1}{-7 - 9} = \frac{5}{-16}$

$m = \frac{-2 - 2}{1 - 0} = \frac{-4}{1}$

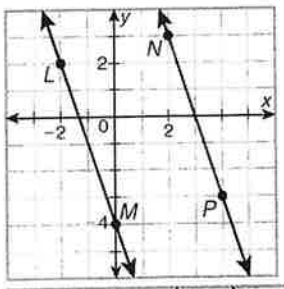
1

No slopes not equal

Name: _____ ID: A

Find Slopes!

19. Which conclusion does each graph support?



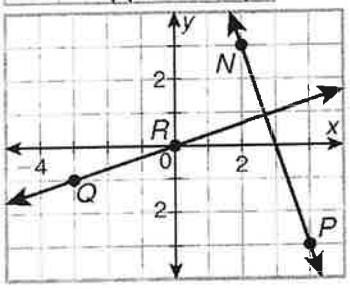
(-2,2) (0,-4)

$LM = \frac{-4-2}{0-2} = \frac{-6}{2} = 3$

(2,3) (4,-3)

$NP = \frac{-3-3}{4-2} = \frac{-6}{2} = -3$

Parallel



(-3,-1) (0,0)

OR $\frac{0-1}{0-3} = \frac{1}{3}$

(2,3) (4,-3)

$NP = \frac{-3-3}{4-2} = \frac{-6}{2} = -3$

Perpendicular

20. What equation is parallel to $y = -\frac{1}{4}x + 5$ and passes through (2, –3)?

$m = -\frac{1}{4}$

$y - y_1 = m(x - x_1)$

$y - -3 = -\frac{1}{4}(x - 2)$

$y + 3 = -\frac{1}{4}x + \frac{1}{2}$

$y = -\frac{1}{4}x - \frac{5}{2}$

21. Is the line through points $P(-4, 2)$ and $Q(-7, -4)$ perpendicular to the line through points $R(9, 8)$ and $S(6, 14)$? Explain.

(1)

(A.) No, their slopes are not opposite reciprocals.

B. No; their slopes are not equal.

C. Yes; their slopes are equal.

D. Yes; their slopes have product –1.

$m = \frac{-4-2}{-7-4} = \frac{-6}{-3} = 2$ $\quad m = \frac{14-8}{6-9} = \frac{6}{-3} = -2$

22. Are the lines $y = -x - 1$ and $4x - 4y = 20$ perpendicular? Explain.

(1)

A. No; their slopes are not opposite reciprocals.

B. Yes; their slopes are equal.

(C.) Yes; their slopes have product –1.

D. No; their slopes are not equal

$m = -1$

$m = 1$

$4x - 4y = 20$

$\frac{-4y}{-4} = \frac{-4x}{-4} + \frac{20}{-4}$

$y = x - 5$

23. What equation is perpendicular to $y = \frac{3}{2}x - 3$ and passes through (–1, 2)?

$LM = -\frac{2}{3}$

$y - 2 = -\frac{2}{3}(x + 1)$

$y - 2 = -\frac{2}{3}x - \frac{2}{3}$

$y = -\frac{2}{3}x + \frac{4}{3}$

24. Find the coordinates of the midpoint of the segment whose endpoints are $H(3, 14)$ and $K(9, 2)$.

(1)

Mid pt $= \frac{3+9}{2}, \frac{14+2}{2}$

$= \frac{12}{2}, \frac{16}{2}$

$= (6, 8)$

25. $M(5, 5)$ is the midpoint of $\overline{RS}$. The coordinates of S are (8, 7). What are the coordinates of R?

(1)

$5,5 = \left(\frac{x+8}{2}, \frac{y+7}{2}\right)$

(2,3)

$x+8 = 10$ $\quad y+7 = 10$

26. Line p contains points $A(-7, -9)$ and $B(4, 0)$. Line q is parallel to line p. Line r is perpendicular to line q. What is the slope of line r? Explain.

(1)

$m_p = \frac{0--9}{4--7} = \frac{9}{11}$

$q = \frac{9}{11}$

$r = -\frac{11}{9}$