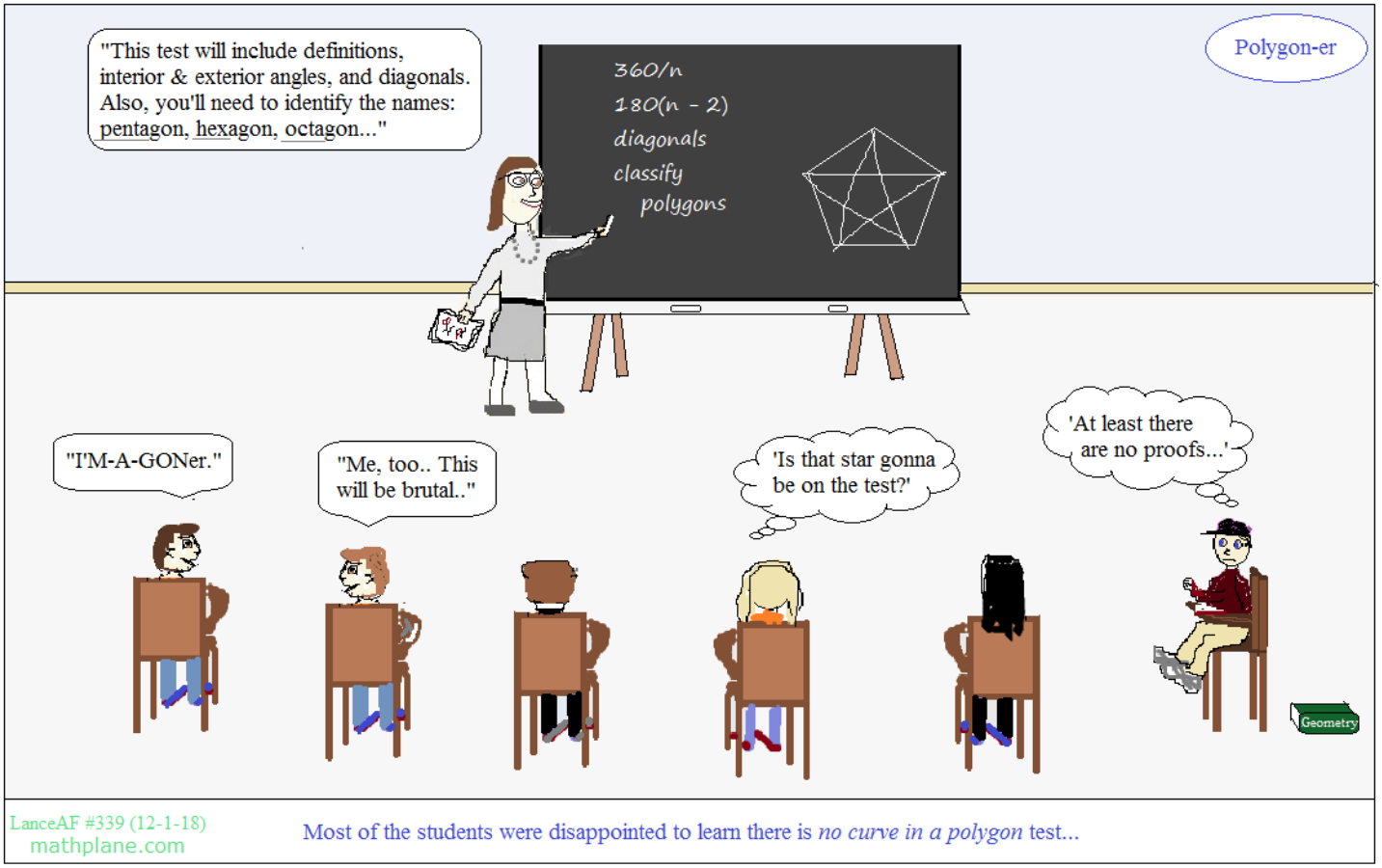
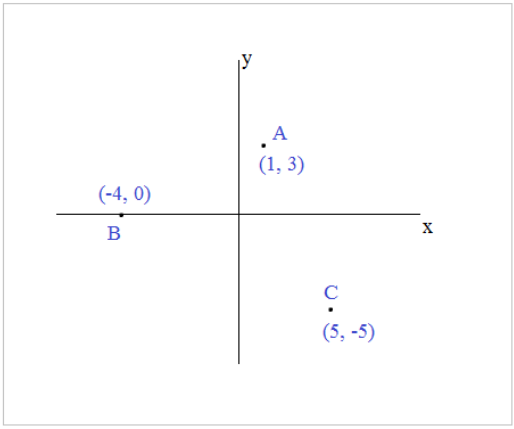


Geometry Mid-Term Review Questions

Geometry Mid-Term Exam Review Questions

Reflection and Rotation

A) Reflection and Rotation: determine the new coordinates:



1) Reflect over the x-axis:

A' = B' = C' =

2) Reflect over the y-axis:

A' = B' = C' =

3) Shift up 3 units, left 4 units:

A' = B' = C' =

4) Rotate clockwise 90° :

A' = B' = C' =

5) Rotate counter-clockwise 90° :

A' = B' = C' =

6) Reflect over the origin:
(rotate 180°)

A' = B' = C' =

**Challenge:

7) Reflect over $y = 4$:

A' = B' = C' =

B) Angle Word Problems

1) An angle is 14 degrees more than its complement.
What is the measure of the angle?

2) The supplement of an angle is 9 more than four times its complement.
What are the supplement, complement, and angle measures?

C) Write the equations of the lines:

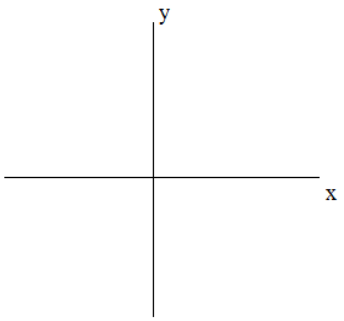
1) parallel to $y = 3$ and passing through (-5, 6)

2) perpendicular to the x-axis and passing through (1, 12)

3) perpendicular to $x = 5$ and passing through (-2, 7)

D) Linear Equations

1) Plot the coordinates (2, 6) (5, -3) on the plane.



2) What is the slope of a line passing through these two points?

3) Write the equation of this line in

a) Point slope form:

b) Slope intercept form:

c) Standard form:

E) Triangles: Always, Sometimes, or Never?

1) An equilateral triangle is obtuse.

2) A right triangle is isosceles.

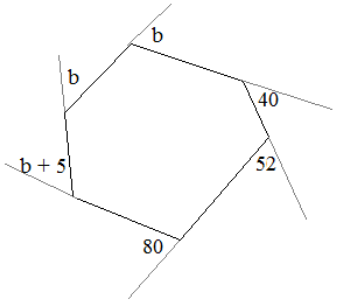
3) The sum of the interior angles of an obtuse triangle is 180°.

F) Triangle Characteristics

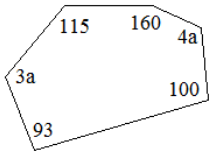
If A = 6 and B = 13, what are the possible lengths of side C?

G) Polygons: Find variables a and b:

1) Given: Degree measures of exterior angles



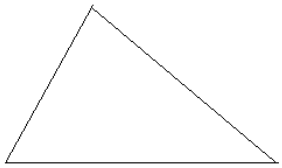
2) Given: Degree measures of interior angles



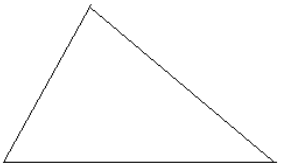
H) Triangles and concurrency

Draw the following:

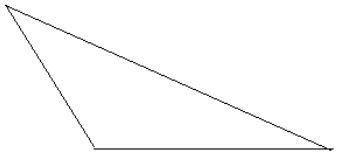
1) 3 medians



2) 3 perpendicular bisectors



3) 3 altitudes



Match each of the following geometry terms with the appropriate triangle points:

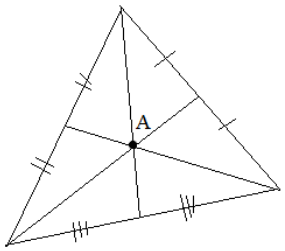
Incenter
Centroid
Orthocenter
Circumcenter

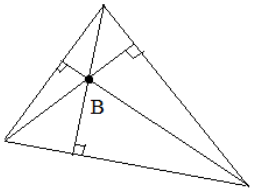
A)

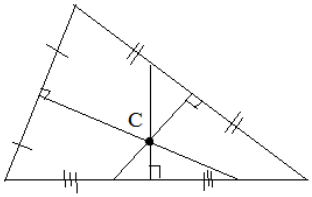
B)

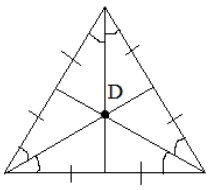
C)

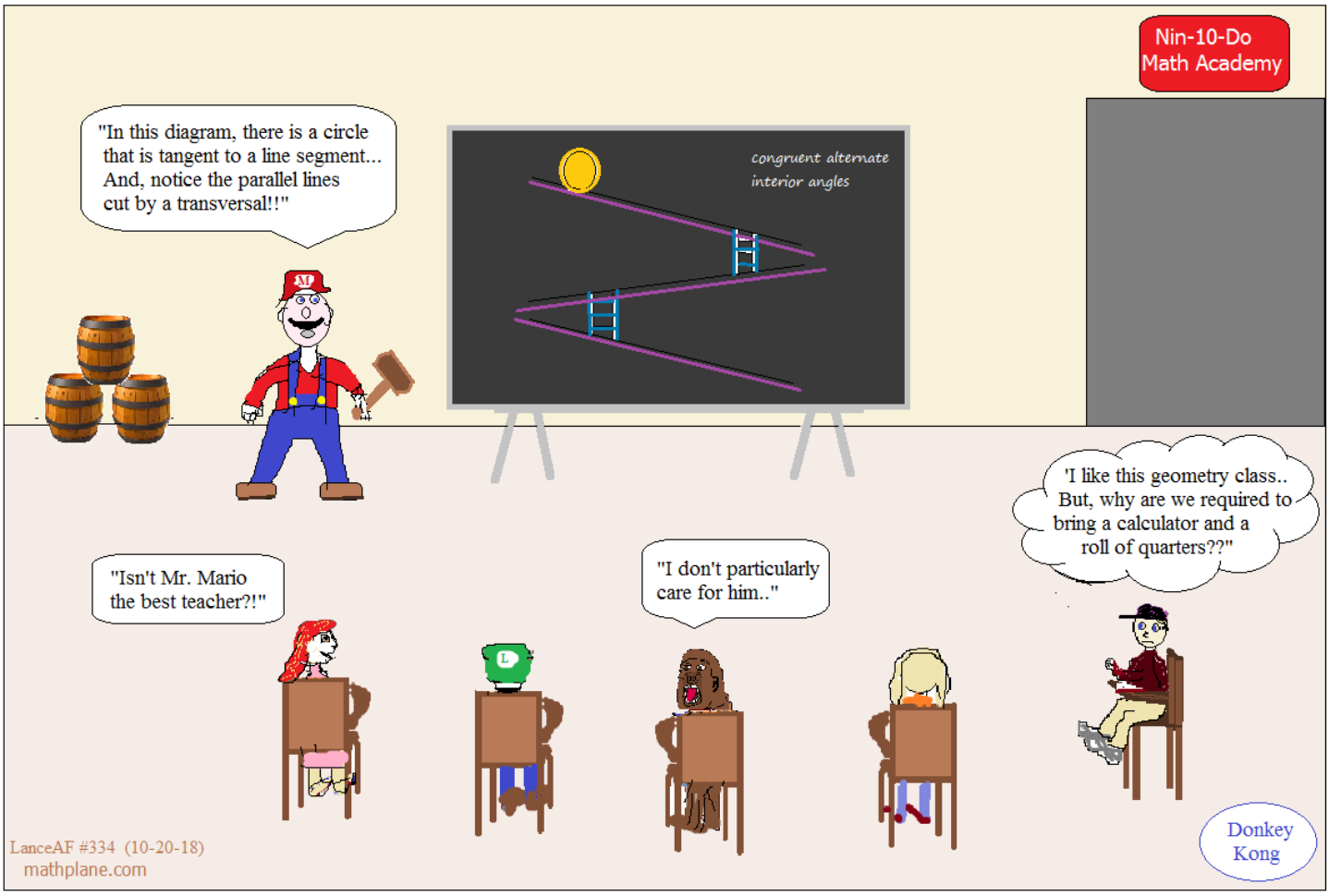
D)










Nin-10-Do Math Academy
"In this diagram, there is a circle that is tangent to a line segment... And, notice the parallel lines cut by a transversal!!"
congruent alternate interior angles
'I like this geometry class.. But, why are we required to bring a calculator and a roll of quarters??"
"Isn't Mr. Mario the best teacher?!"
"I don't particularly care for him.."
LanceAF #334 (10-20-18)
mathplane.com
Donkey Kong

SOLUTIONS-→

Geometry Mid-Term Exam Review Questions

SOLUTIONS

Reflection and Rotation

A) Reflection and Rotation: determine the new coordinates:

1) Reflect over the x-axis:

A' = (1, -3) B' = (-4, 0) C' = (5, 5)

2) Reflect over the y-axis:

A' = (-1, 3) B' = (4, 0) C' = (-5, -5)

3) Shift up 3 units, left 4 units:

A' = (-3, 6) B' = (-8, 3) C' = (1, -2)

4) Rotate clockwise 90° :

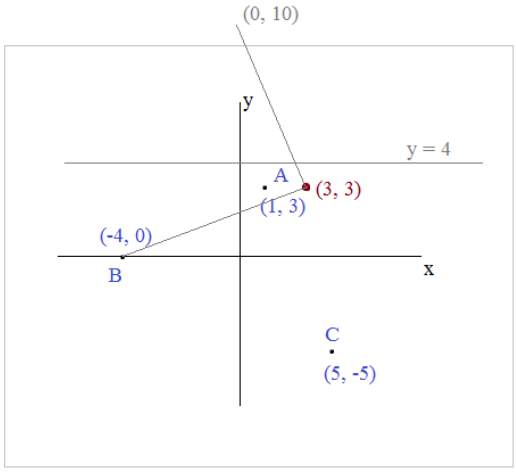
A' = (3, -1) B' = (0, 4) C' = (-5, -5)

5) Rotate counter-clockwise 90° :

A' = (-3, 1) B' = (0, -4) C' = (5, 5)

6) Reflect over the origin:
(rotate 180°)

A' = (-1, -3) B' = (4, 0) C' = (-5, 5)



**Challenge:

7) Reflect over y = 4:

A' = (1, 5) B' = (-4, 8) C' = (5, 13)

B) Angle Word Problems

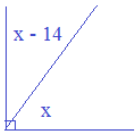
1) An angle is 14 degrees more than its complement.
What is the measure of the angle?

the complement is 38

x = 52 degrees

x = "an angle"
x − 14 = the complement
x + (x - 14) = 90

2x = 104



2) The supplement of an angle is 9 more than four times its complement.
What are the supplement, complement, and angle measures?

x = "an angle"
(180 - x) = "the supplement"
(90 - x) = "its complement"

(180 - x) − 9 = 4 • (90 - x)

"nine more" "4 times"

171 − x = 360 − 4x
3x = 189
x = 63

angle: 63 degrees
complement: 27 degrees
supplementary: 117 degrees

C) Write the equations of the lines:

1) parallel to y = 3 and passing through (-5, 6)

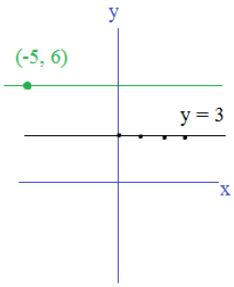
y = 6

steps a) graph y = 3
(0, 3), (1, 3), (2, 3) etc..

b) plot (-5, 6)

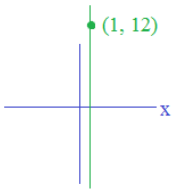
c) draw parallel line

d) describe the line...



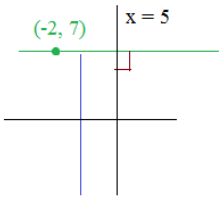
2) perpendicular to the x-axis and passing through (1, 12)

x = 1



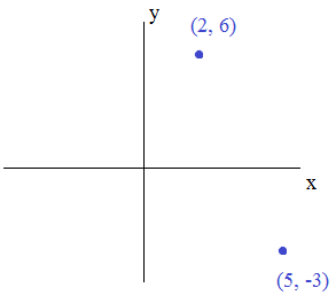
3) perpendicular to x = 5 and passing through (-2, 7)

y = 7



D) Linear Equations

1) Plot the coordinates (2, 6) (5, -3) on the plane.



2) What is the slope of a line passing through these two points?

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{6 - (-3)}{2 - 5} = -3$$

3) Write the equation of this line in

a) Point slope form: $y - y_1 = m(x - x_1)$ using (2, 6) $y - 6 = -3(x - 2)$

b) Slope intercept form:

$y = mx + b$

method 1: rewrite point slope form

$y - 6 = -3x + 6$

$y = -3x + 12$

c) Standard form:

method 2: plug in numbers

standard form: $ax + by = c$

since slope $m = -3$ ⇨ $y = -3x + b$

rearrange other forms: $3x + y = 12$

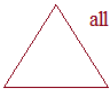
then, to find the slope intercept (b), plug in one of the points.... using (2, 6)

$6 = -3(2) + b$

$b = 12$

E) Triangles: Always, Sometimes, or Never?

1) An equilateral triangle is obtuse. NEVER



all angles are 60° (acute)

2) A right triangle is isosceles. SOMETIMES (if it is a 45-45-90, then it is right)

3) The sum of the interior angles of an obtuse triangle is 180°.

ALWAYS Sum of interior angles of ALL triangles is 180°

F) Triangle Characteristics

If A = 6 and B = 13, what are the possible lengths of side C?

Use the "sum/difference" method

C is the largest side: ("the sum")

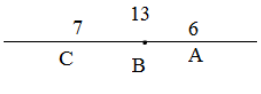
$13 + 6 = 19$

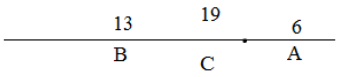
B is the largest side: ("the difference"

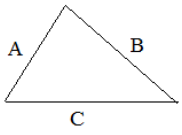
$13 - 6 = 7$

$7 < C < 19$

Note: If C were equal to 7 or 19, then we would have a line segment..





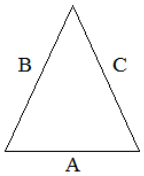


Case 1: C is largest side

A = 6 B = 13

13 < C < 19

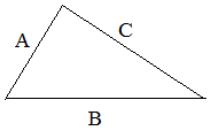
If C > 19, then A and B won't touch!



Case 2: isosceles

A = 6

B = C = 13



Case 3: B is the largest side

A = 6 B = 13

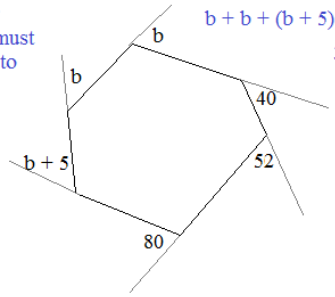
7 < C < 13

If C < 7, then A and C won't touch!

G) Polygons: Find variables a and b:

1) Given: Degree measures of exterior angles

exterior angles must add up to 360



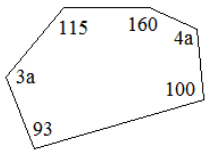
b + b + (b + 5) + 40 + 52 + 80 = 360

3b + 177 = 360

3b = 183

b = 61

2) Given: Degree measures of interior angles



6 sides, so the sum of interior angles is

(6 - 2) x 180 = 720 degrees

3a + 4a + 115 + 160 + 100 + 93 = 720

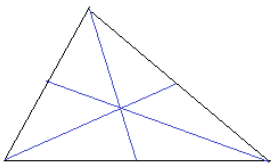
7a = 252

a = 36

H) Triangles and concurrency

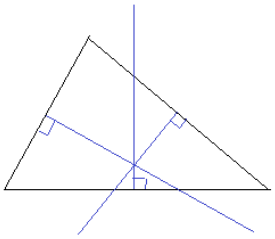
Draw the following:

1) 3 medians



(vertex to midpoint of opposite side)

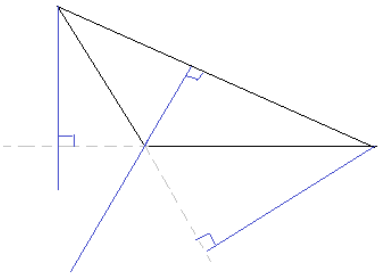
2) 3 perpendicular bisectors



(extend from midpoint of each side)

3) 3 altitudes

(perpendicular line segment from vertex to opposite side)



Match each of the following geometry terms with the appropriate triangle points:

Incenter
Centroid
Orthocenter
Circumcenter

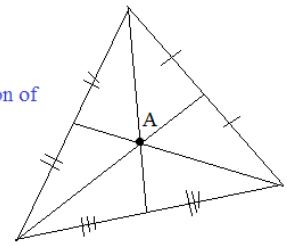
A) Centroid

B) Orthocenter

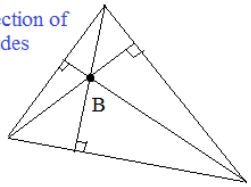
C) Circumcenter

D) Incenter, Centroid, Orthocenter, or Circumcenter

Intersection of 3 medians

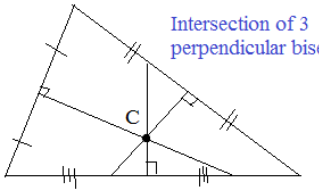


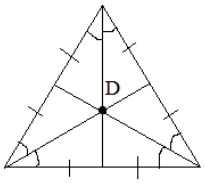
Intersection of 3 altitudes



intersection of medians AND angle bisectors (and altitudes/perp. bisectors)

Intersection of 3 perpendicular bisectors





(equilateral triangle)