Name: Key Class: Date:

Chapter 3 Paper Review

Write an equation in slope-intercept form for the line passing through the pair of points.

1. **(6, –5), (–6, –3)**

↳ $y = mx + b$

$m = \text{Slope} = \frac{-3-(-5)}{-6-6}$

$m = \frac{2}{-12} = \boxed{-\frac{1}{6}}$

Pick a point → I chose $(-6, -3)$

$y - (-3) = -\frac{1}{6}(x - (-6))$

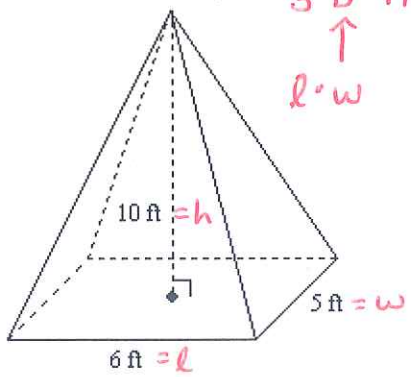
$y + 3 = -\frac{1}{6}x - 1$

$-3 \quad -3$

$\boxed{y = -\frac{1}{6}x - 4}$

Find the volume of the solid.

2.



↳ $V = \frac{1}{3}b \cdot h$

↑

$\ell \cdot w$

$V = \frac{1}{3}(6\text{ft} \cdot 5\text{ft})(10\text{ft})$

$\boxed{V = 100\text{ft}^3}$

Determine the slope of the line that contains the given points.

3. ***T*(6, 3), *V*(8, 8)**

↳ $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8-3}{8-6} = \boxed{\frac{5}{2}}$

Indicate the answer choice that best completes the statement or answers the question.

Determine whether the conjecture is true *or* false. *Give a counterexample for any false conjecture.*

4. **Given:** Two angles are supplementary. → sum equals 180°
Conjecture: They are both acute angles. → $< 90°$

F. False; they must be vertical angles.

G. False; either both are right or one is obtuse.

H. True

I. False; either both are right or they are adjacent.

At most an acute angle could be 89°, but even then

$89° + 89° = 178°$

which isn't 180°

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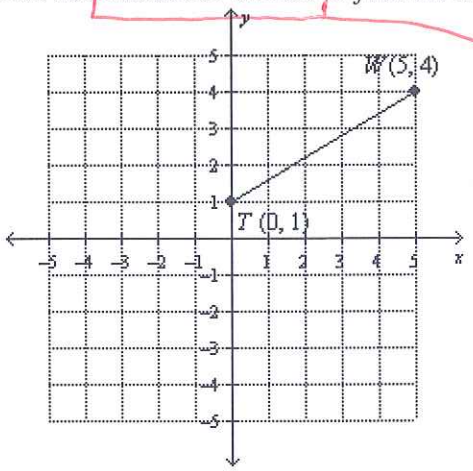
Chapter 3 Paper Review

angles congruent

5. **Given:** a concave polygon
   Conjecture: It can be regular or irregular.
   A. False; all concave polygons are regular.
   B. True
   C. False; to be concave the angles cannot be congruent.
   D. False; a concave polygon has an odd number of sides.

↳ can have an even # of sides

Use the Distance Formula to find the distance between each pair of points.

6. 

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Points: W(5,4) T(0,1)

$d = \sqrt{(5-0)^2 + (4-1)^2}$

$d = \sqrt{5^2 + 3^2}$

$d = \sqrt{25+9}$

$d = \sqrt{34}$

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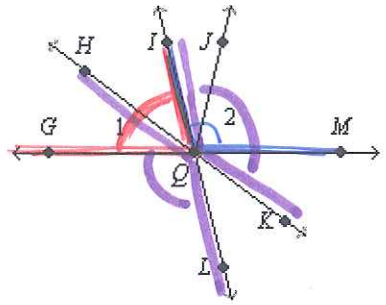
Chapter 3 Paper Review

Indicate the answer choice that best completes the statement or answers the question.

Use the figure to find the angles.



sum equals 180°

7. Name an angle supplementary to $\angle MQI$.

A. $\angle MQK$ B. $\angle IQH$

C. $\angle IQG$ D. $\angle GQL$

>90°

8. Name two obtuse vertical angles.

F. $\angle GQI$, $\angle IQM$ G. $\angle KQL$, $\angle IQH$

H. $\angle HQL$, $\angle IQK$ I. $\angle KQL$, $\angle KQM$

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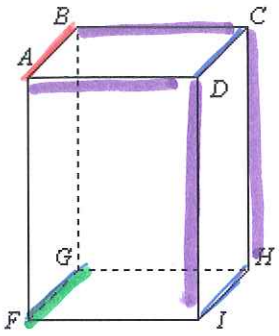
Chapter 3 Paper Review

Refer to the figure below.



// same direction, never cross

9. Name all segments parallel to $\overline{AB}$.

A. $\overline{AD}, \overline{BC}, \overline{GH}, \overline{FI}$ B. $\overline{DI}, \overline{CH}, \overline{GH}, \overline{FI}$

C. $\overline{CD}, \overline{FG}, \overline{HI}$ D. $\overline{GH}, \overline{AD}, \overline{FI}$

not parallel & not intersecting

10. Name all segments skew to $\overline{GF}$.

F. $\overline{CD}, \overline{CH}, \overline{DI}, \overline{HI}$ G. $\overline{FI}, \overline{GH}, \overline{DI}, \overline{CH}$

H. $\overline{BC}, \overline{AD}, \overline{DI}, \overline{CH}$ I. $\overline{AD}, \overline{AB}, \overline{BC}, \overline{CD}$

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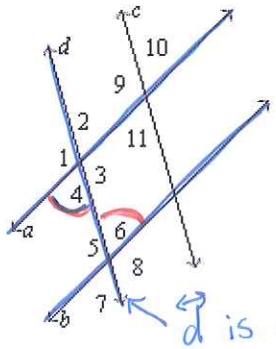
Chapter 3 Paper Review

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

11. $\angle 4 \cong \angle 6$



$\overleftrightarrow{d}$ is a transversal between $\overleftrightarrow{a}$ & $\overleftrightarrow{b}$

A. $a \parallel b$; congruent corresponding angles

B. $c \parallel d$; congruent corresponding angles

C. $c \parallel d$; congruent alternate interior angles

D. $a \parallel b$; congruent alternate interior angles

Find the coordinates of the midpoint of a segment having the given endpoints.

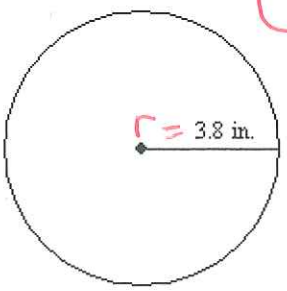
12. ***Q*(7.8, 4), *R*(1.6, 1.1)**

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = \left(\frac{7.8+1.6}{2}, \frac{4+1.1}{2}\right)$

$= (4.7, 2.55)$

Find the circumference of the figure.

13.



$C = 2\pi r$ ← radius

$C = 2\pi (3.8 in)$

$C = 7.6\pi$

$C = 23.8 in$

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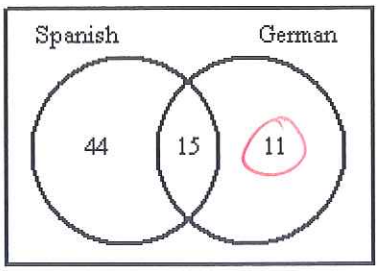
Chapter 3 Paper Review

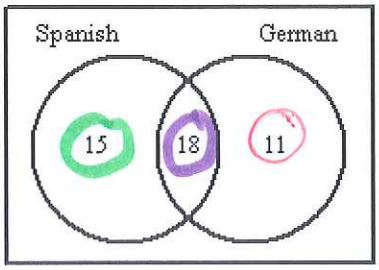
Indicate the answer choice that best completes the statement or answers the question.

14. Of the 44 students studying foreign languages at Ashley's school, 15 are studying Spanish only, 11 are studying German only, and 18 are studying both languages. Which Venn diagram correctly shows this situation?

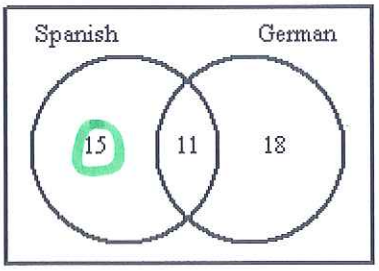
F. **Learning Foreign Languages**



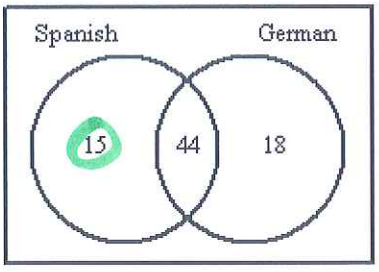
G. **Learning Foreign Languages**



H. **Learning Foreign Languages**

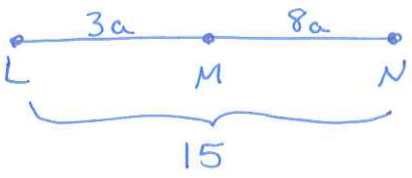


I. **Learning Foreign Languages**



15. **Find the value of the variable and *LM*** if *M* is between *L* and *N*.
HInt: draw segment LN and put M between L and N to "see" the equation.

***LM* = 3*a*, *MN* = 8*a*, *LM* = 15**



$LM + MN = LN$

$3a + 8a = 15$

$\frac{11a}{11} = \frac{15}{11}$

$a = 1.36$

$LM = 3(1.36)$

$LM = 4.09$

16. Two angles are supplementary. One angle measures 32° more than the other. **Find the measure of the two angles.**

sum is 180° ($x + y = 180°$)

$y = x + 32$ (y: other angle; x: angle)

2 equations:

(1) $x + y = 180°$

(2) $y = x + 32$

Using substitution: $x + (x + 32) = 180°$

$2x + 32 = 180$

$-32 \quad -32$

$\frac{2x}{2} = \frac{148}{2}$ → $x = 74°$

substitute: $y = 74° + 32°$

$y = 106°$

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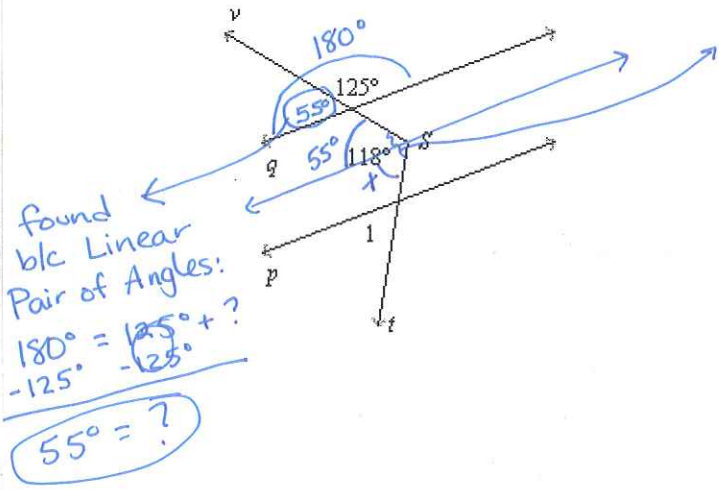
Chapter 3 Paper Review

17. In the figure, $p \parallel q$. Find $m\angle 1$.



found b/c Linear Pair of Angles:

$180° = 125° + ?$

$-125° \quad -125°$

$55° = ?$

$55° + x° = 118°$

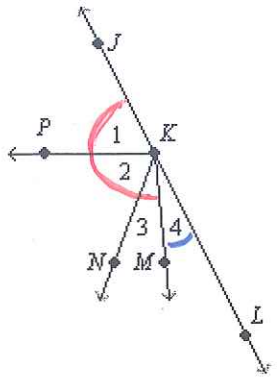
$-55° \quad -55°$

$x° = 63°$

$x° = m\angle 1$ since they are corresponding angles

so... $m\angle 1 = 63°$

In the figure, $\overrightarrow{KJ}$ and $\overrightarrow{KL}$ are opposite rays. $\angle 1 \cong \angle 2$ and $\overrightarrow{KM}$ bisects $\angle NKL$.



18. If $m\angle JKM = 5x + 18$ and $m\angle 4 = x$, what is $m\angle 4$?

We know a linear pair of angles has a total degree measurement of 180°

so... $m\angle JKM + m\angle 4 = 180°$

substitution $(5x + 18) + x = 180°$

$6x + 18 = 180$

$-18 \quad -18$

$\frac{6x}{6} = \frac{162°}{6}$

$x = 27° = m\angle 4$

Indicate the answer choice that best completes the statement or answers the question.

~~*Find the perimeter in question 11.*~~ (ignore)

19. Find the perimeter of A regular octagon that has a side measuring 3 mm.

A. 12 mm B. 18 mm

C. 24 mm D. 26 mm

8 sides are $\cong$

Perimeter

$P = 8s$ (s = sides)

$P = 8(3mm)$

$P = 24mm$

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Chapter 3 Paper Review

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

Write an equation in point-slope form of the line having the given slope that contains the given point.

20. $m = 4.2$, $(2.2, 4.2)$

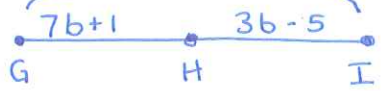
$y - 4.2 = 4.2(x - 2.2)$ point-slope form

$y = 4.2x - 9.2 + 4.2$ ↓ for extra practice

$y = 4.2x + 13.4$ slope-intercept form

21. **Find** the value of the **variable and *GH*** if H is between G and I.

$GH = 7b + 1$, $HI = 3b - 5$, $GI = 7$



$GH + HI = GI$

$(7b+1) + (3b-5) = 7$

$10b - 4 = 7$

$+4 \quad +4$

$\frac{10b}{10} = \frac{11}{10}$

$b = 1.1$ ↓ substitute

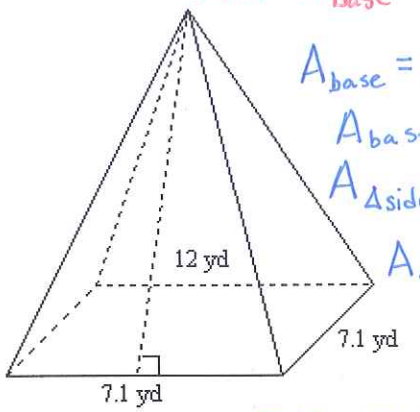
$GH = 7b + 1$

$GH = 7(1.1) + 1$

$GH = 8.7$

Find the surface area of the solid.

22.



↳ $S.A. = A_{Base} + 4A_{Triangle\ sides}$

$A_{base} = (7.1yd)(7.1yd)$

$A_{base} = 50.4\ yd^2$

$A_{\Delta sides} = \frac{1}{2}(7.1yd)(12yd)$

$A_{\Delta sides} = 42.6\ yd^2$

$S.A. = A_{base} + 4A_{\Delta sides}$

$S.A. = 50.4 + 4(42.6) = 220.8\ yd^2$

Determine whether $\overleftrightarrow{WX}$ *and* $\overleftrightarrow{YZ}$ *are* parallel, perpendicular, or neither.

same slope

23. $W(-3, -6)$, $X(5, 6)$ $Y(1, 6)$, $Z(8, -1)$

slope $\overline{WX} = \frac{6-(-6)}{5-(-3)}$ neg reciprocal slope

$m = \frac{6+6}{5+3}$

$m = \frac{12}{8}$

$m = \frac{3}{2}$

slope $\overline{YZ} = \frac{-1-6}{8-1}$

$m = \frac{-7}{7}$

$m = -1$

not same or negative reciprocal

so... neither ✓

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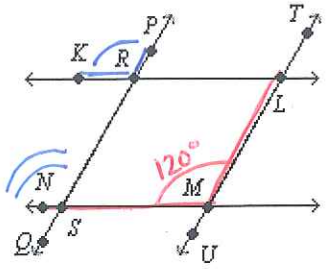
Chapter 3 Paper Review

24. In the figure, $m\angle NML = 120$, $\overleftrightarrow{PQ} \parallel \overleftrightarrow{TU}$ and $\overleftrightarrow{KL} \parallel \overleftrightarrow{NM}$. Find the measure of angle *PRK*.



$\angle PRK \cong \angle NSR$ by corresponding angles

$\angle NSR \cong \angle NML$ by corresponding angles

$\angle PRK \cong \angle NML$ by transitive property

So... $m\angle PRK = 120°$

Write an equation in slope-intercept form of the line having the given slope and y-intercept.

25. ***m*: $-\frac{4}{7}$, (0, –10)**

$y = mx + b$

$y - (-10) = -\frac{4}{7}(x - 0)$

$y + 10 = -\frac{4}{7}x$

$-10 \quad -10$

$y = -\frac{4}{7}x - 10$

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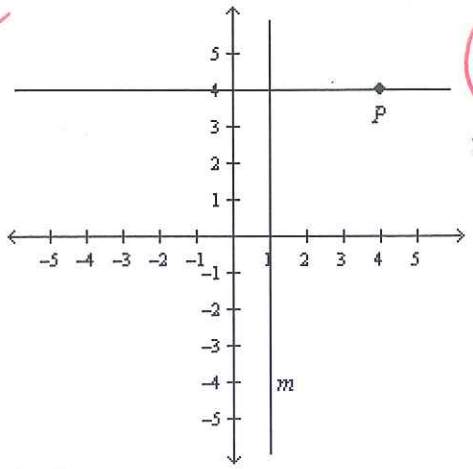
Chapter 3 Paper Review

Indicate the answer choice that best completes the statement or answers the question.

***Construct a line perpendicular to* m *through* P.** ***Then find the distance from* P *to* m.**
Note the calculated distance for each answer choice in the lower left hand corner of the coordinate plane.

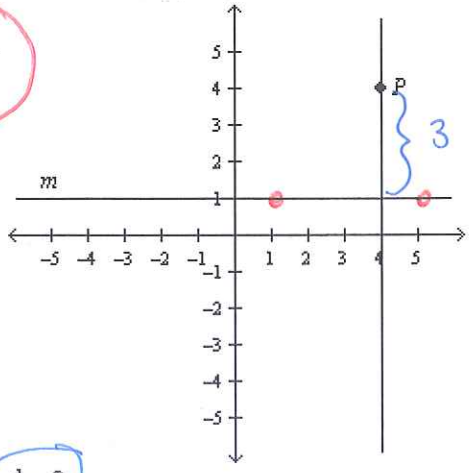
26. Line m contains points $(5, 1)$ and $(1, 1)$. Point P has coordinates $(4, 4)$.

F.



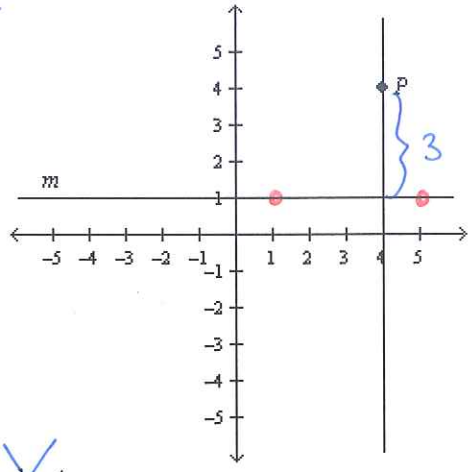
$d = 4$

G.



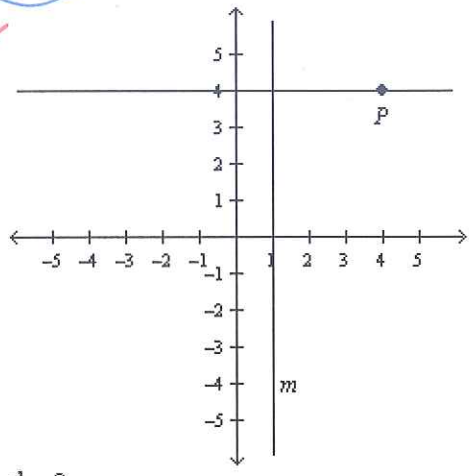
$d = 3$

H.



$d = 4$

I.



$d = 3$

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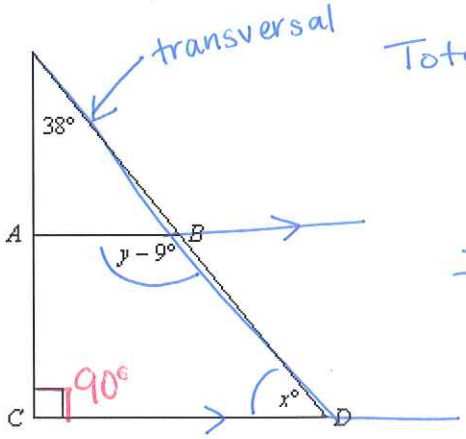
Chapter 3 Paper Review

27. In the figure, $\overline{AB} \parallel \overline{CD}$. Find x and y.



Total Degree measure of $\triangle = 180°$

$180° = 38° + 90° + x°$

$180° = 128° + x°$

$-128° \quad -128°$

$52° = x°$

$\angle ABD$ & $\angle BDC$ are supplementary

SO... $m\angle ABD + m\angle BDC = 180°$

Substitution $(y° - 9°) + x° = 180°$

$y° - 9° + 52° = 180°$

$y° + 43° = 180°$

$-43° \quad -43°$

$y° = 137°$