Geometry HW By Month: Subject to Change: * Do HW on special block paper.
DR. Norton

August 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7 G.CO.1 ⇒	8 Day 1 Rules Handbook Supplies Introd.	9 PPS: 7-8 Sect. 1-1 * 1 DAY Every other odd 1, 5, 9, 13, 17 25.	10 Section 1-2 PPS 16-17 EOO 1-35	11 ⇒ Worksheets File Cabinet	12 Worksheets File Cabinet	13
14 G.CO.1 and ⇒ G.GPE.6	15 Section 1-3 PPS 23-24 EOO 1-29	16 Section 1-4 PPS 31-32 EOO 1-31	17 → 2days Worksheets File Cabinet	18 Sect. 1-5 PPS 37-39 EOO 1-37	19 → 2days Worksheets	20
21 SKip Sec 1-6 G.CO.12 G.PE.7	22 Quiz #1 Sec. 1-1 to 1-5 Sect. 1-7 → 2days PPS 53-55 1-15 EOO	23 Section 1-7 EOO → 2days PPS 53-55 17-33 EOO	24 Go over Quiz From 8/22 Worksheets. section 1-8 2days PPS: 64-65 EOO: 1-21 →	25 Sec 1.8 PPS: 65-66 EOO: 23-33 1 worksheet	26 Practice Unit 1 Test	27
28 N.Q.1 G.MG.2	29 Review Practice TEST	30 Unit 1 chapter 1 EXAM	31 Go over Unit 1 Exam			

Courtesy of WinCalendar.com

More Calendars: PDF Calendar, 2016 PDF Calendar, Word Calendar, Excel Calendar

Common Core Standards

Chapter 1: Big Ideas

1) Visualization: Essential Question: "How can you represent a 3d figure with a 2d drawing?
2) REASONING: What are the building blocks of Geometry?
3) Measurement: How can you describe the attributes of a segment or angle?

Classroom Procedures and Grading Policy for Algebra 3/4 and Geometry

Dr. Norton

website: drnortonmath.weebly.com

Homework, handouts (copies) etc will be found here. I will give you a handout if you lose it, find a replacement on the website. Don't ask me.

If you are absent your make up work will be found here.

Room: B12

Email: snorton@aaechighschools.com

Textbook: Algebra 2 and Geometry Common Core Edition

Randall I. Charles, Basia Hall, Dan Kennedy, Allan E.Bellman, Sadie Chavis Bragg, William G. Handlin, Stuart J. Murphy, and Grant Wiggins (2012)
Pearson, USA

Course Description:

Algebra 3/4

The major purpose of this course is to provide advanced concepts in algebra and trigonometry such as algebra of functions, leading term test, exponential decay, double and half angle identities. Students will apply the concepts of deductive reasoning and problem solving. Students will prepare for college and the world of work through an emphasis on critical analysis as well as demonstration of key soft skill behaviors.

Geometry

COURSE DESCRIPTION
Geometry is a one-year course that reviews the geometric concepts of previous math courses, and in addition, encourages and guides the student in the discovery of new geometric concepts.

Geometry stresses the ability to reason logically and to think critically. A major part of the course will be devoted to teaching the student how to present a formal proof. Geometric properties of both two and three dimensions are emphasized as they apply to points, lines, planes, circles and polygons.

Essential Knowledge
Upon successful completion of this class, students will be able to:
- Use and prove basic theorems involving congruence and similarity of figures
- Determine how changes in dimensions affect perimeter and area of common geometric figures
- Apply and use the properties of proportion
- Perform basic constructions with straight edge and compass
- Prove the Pythagorean theorem
- Use the Pythagorean theorem to determine distance and find missing dimensions of right triangles
- Know and use formulas for perimeter, circumference, area, volume, lateral and surface area of common

figures
- Find and use measures of sides, interior and exterior angles of polygons to solve problems
- Use relationships between angles in polygons, complementary, supplementary, vertical and exterior angle properties
- Use special angle and side relationships in special right triangles
- Understand, apply, and solve problems using basic trigonometric functions
- Prove and use relationships in circles to solve problems
- Prove and use theorems involving properties of parallel lines cut by a transversal, quadrilaterals and circles
- Write geometric proofs, including indirect proofs
- Construct and judge validity of logical arguments
- Prove theorems using coordinate geometry including the midpoint of a segment and distance formula
- Understand transformations in the coordinate plane
- Construct logical verifications to test conjectures and counterexamples

Write basic mathematical arguments in paragraph and statement-reason form

Materials Needed:

Quadrille Ruled Notebook graph and lined paper flash drive Scientific or Graphing calculator #2 pencils

Classroom Expectations and Policies:

Students will be able to demonstrate a clear and reliable understanding of key content areas. It will not be sufficient to get the right answer on the final exam (although this will be required, as well). Each student's grasp of the content requirements will also be observed in classroom discussions, homework, classroom participation and attendance. In order to move on to the next course, students must achieve a grade of C or better in this one. Grades are designed to reflect the level of proficiency a student demonstrates in the following three areas:

Process

Notes, drills, short writing assignments, reading activities, and other classroom activities.

Grading:

Product

Evaluation pieces, such as finished writing, presentations, exams, projects, and notebooks.

Soft Skills

Includes such things as organization, attendance, punctuality, preparation, and communication. Grades will be recorded on Progress Reports.

Grades are cumulative and based on the following breakdown: 20% Final

40% Tests/Quizzes
20% Homework/Assignments
20% Class work/Notes/Participation

The following cutoffs will be used to determine your final letter grade:

90%100% **A**

80%89% **B**

70%79% **C**

Below 70% **F**

NOTE: In order to view progress, grades can be accessed online via Synergy. I update the grades weekly. So, if you do not see a grade for an assignment check back in a day or so or leave me a message via email. I will get back to you within 48 hours.

Homework: (use the block paper & with name and period number!)

Homework is assigned daily, should be recorded in their student planner, and should be turned in the next day. Any assignments turned in after that time will be considered late and worth half credit. Assignments are generally worth 5 points for each section. Since answer keys are available for students to check their solutions, homework is graded for completion. Work should be neatly written, stapled and each assignment easily identifiable or no credit will be given.

Test/Quizzes:

Quizzes are generally announced, but I reserve the option of giving a "pop" quiz. Pop quizzes are usually open book and/or open note. Expect to have a quiz once a week. Many times these quizzes are homework quizzes (problems taken directly from the homework). Tests will be given, at the very least, at the end of every chapter and are cumulative. Remember to show work: **NO WORK = NO CREDIT!** Each test will have a retake option. You will need to come in on your own time to retake exam and it will need to be done in a timely fashion. So that I can have the materials ready, you will need to make an appointment to retake a test.

Absence:

For an excused absence, the student will have one day to make up missing work. If the student misses more than one excused day, he/she must discuss with the teacher concerning a timetable to make up missing work. The student will be expected to hand in any work that was due on the date missed as soon as the student returns to school. See school agenda about excused and unexcused absences. Zeros will be given for all unexcused absences.

Classroom Consequences: When rules are broken, there are always consequences. If a student chooses to break a rule, s/he may receive one or more of the following consequences:

1. Warning
2. Lunch detention
3. Call home
4. Conference with guardian
5. Office referral

Classroom Procedures: There is a certain way to do things in the classroom. We will go over these during the first week. Procedures will cover how to hand in papers, where to find daily assignments, what to do in an emergency, and others.

Hall Passes: No hall passes will be given. Bathroom breaks will be in between class time only.

Rules:

- Respect others, the instructor and yourself.
- No food or drink allowed in class except water (all food **must** be disposed of before entering the class).
- No sunglasses or hats worn in class. Any items worn after the start bell will be held to the end of the day.

- No cell phones, IPods, MP3 players or other audio devices allowed. This is school policy.
- Be in your seat when class begins and start the mindset.
- Have pencil, paper, and any other materials ready at the start of the period.
- If it is written on the board you should write it in your notes.

Please sign this page and return.

Signing of this document verifies that you have been informed of the Fall 2015 Class Procedures and Grading Policies for the Geometry and/or Algebra 3/4 class.

- In order to keep everyone informed of their progress, students and parents can access the student's grade online via Synergy. I update the grades weekly. If you do not see a grade for an assignment, please, check in a day or so or leave me a message via email. I will get back to you within 48 hours.

- All assignments for the week will be recorded in the classroom daily, but minor changes may be necessary.

Have a wonderful and successful semester!

Student Name (Please Print): _____

Student Signature: _____

Name of Parent (Print Please): _____

Parent Signature: _____ **Phone:** _____

Due back by Friday

Dear Parents,
August 2016

Welcome to the 2016-17 school year.

My name is *Steve Norton*.

I am a highly qualified teacher in mathematics.

I have attended the Massachusetts Institute of Technology, Harvard College, Boston University, Bunker Hill College, Minnesota, (Golden Valley).
I have a bachelor's, two (2) masters and a doctorate degree.

I am delighted to have your student in my classroom this year and look forward to sharing the school year together with him/her. As a teacher, I will endeavor to create an educational partnership with you and your student that will foster courage, determination, and passion for knowledge. In addition to this, my commitment as an educator will be to provide your student with a nurturing and challenging educational environment that will ensure his/her academic success in high school mathematics.

Since the Common Core curriculum in high school is very diverse and challenging, *homework* will be an important reinforcement tool to help students achieve mastery with the standards.

Homework will be assigned to your son/daughter every evening, Monday through Friday.

Homework will reinforce concepts already discussed in class and be a natural extension of their class coursework. Many homework assignments will require your student to study at home. When studying at home, students should have a quiet, distraction-free environment.

Since attendance and appropriate behavior at school are crucial to the learning process, it is imperative that your son/daughter attends school every day as a mature and responsible student. During the first week of school, I will be working together with my students to develop a set of classroom rules, rewards and consequences. Your son/daughter should be on campus on time and ready to learn.

Instruction will begin promptly every day. If an absence or tardy is unavoidable, your son/daughter will have the opportunity to complete their missed assignments, but nothing can recreate the classroom environment filled with student-teacher interaction when a student is late or absent.

Through our strong partnership, I will ensure that our common goal to have your son/daughter reach his/her full potential with the Arizona State Standards will be realized. Please look for future communications regarding behavior policies, classroom rewards and consequences, grading procedures, and daily schedules. I would also like to take this opportunity to thank each one of you in advance for both your support and partnership for the upcoming school year. I look forward to meeting you soon.

Sincerely,

Steve Norton B.S., M.A., M.S., Ph.D. Ed.D in Progress

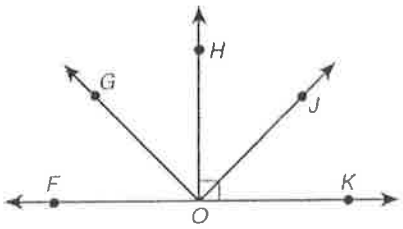
Date _____

Dear Family,

In this chapter, your child will learn basic concepts such as identifying points and planes, measuring and constructing segments and angles, and problem-solving formulas. This provides the foundation needed for further study in geometry and for careers in areas such as graphic arts and architecture.

Your child will learn about different types of angles and how to describe special pairs of angles.

Look at the figure.



1. **Name an acute angle.**

   $\angle KOJ$

2. **Name a right angle.**

   $\angle HOK$

3. **Name an obtuse angle.**

   $\angle GOK$

4. **Name a straight angle.**

   $\angle FOK$

5. **Name two adjacent angles.**

   $\angle HOJ$ and $\angle JOK$

6. **Name two complementary angles.**

   $\angle HOJ$ and $\angle JOK$

7. **Name two supplementary angles.**

   $\angle JOK$ and $\angle JOF$

Your child will learn to identify the **midpoint** of a segment and then use the midpoint to find the length of the segment.

***Y* is the midpoint of segment *WZ*, and $WY = 7x$, and $YZ = 2x + 5$. What is the value of *x*?**

Solve for *x*.

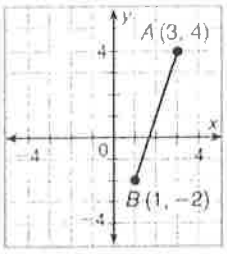
$$WY = YZ$$
$$7x = 2x + 5$$
$$-2x \quad -2x$$
$$\frac{5x}{5} = \frac{5}{5}$$
$$x = 1$$

Your child will also use the Distance Formula and the Pythagorean Theorem to find the distance between two points.

The Distance Formula is $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

The Pythagorean Theorem is $a^2 + b^2 = c^2$, where a and b are the lengths of the legs of a right triangle and c is the length of the hypotenuse.

Find the distance between points *A* and *B* in this coordinate plane using the Distance Formula and the Pythagorean Theorem.



Distance Formula

$d = \sqrt{(3-1)^2 + (4-(-2))^2}$

$= \sqrt{(2)^2 + (6)^2}$

$= \sqrt{4 + 36}$

$= \sqrt{40}$

≈ 6.3

Pythagorean Theorem

$a^2 + b^2 = c^2$

$a = 2, b = 6$

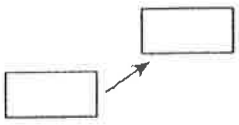
$c^2 = 2^2 + 6^2$

$c = \sqrt{4 + 36}$

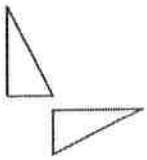
$= \sqrt{40}$

≈ 6.3

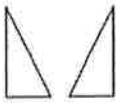
Your child will also learn about transforming plane figures using translations, rotations, and reflections. A **translation** slides a figure along a line without turning. A **rotation** turns the figure around a point, called the center of rotation. A **reflection** flips the figure across a line to create a mirror image.



translation



rotation



reflection

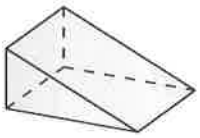
For additional resources, visit *go.hrw.com* and enter the keyword MG7 Parent.

1-1 Nets and Drawings for Visualizing Geometry

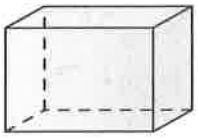
Vocabulary

Review

Identify each figure as *two-dimensional* or *three-dimensional.*

1. 

2. 

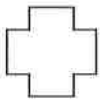
3. 

Vocabulary Builder

polygon (noun) PAHL ih gahn

Definition A **polygon** is a two-dimensional figure with three or more sides, where each side meets exactly two other sides at their endpoints.

polygon



Main Idea: A **polygon** is a closed figure, so all sides meet. No sides cross each other.

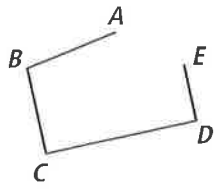
Examples: Triangles, rectangles, pentagons, hexagons, and octagons are **polygons**.

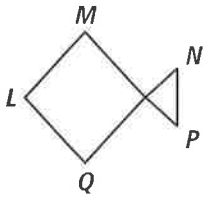
Use Your Vocabulary

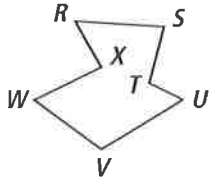
Underline the correct word(s) to complete each sentence.

4. A *polygon* is formed by two / three or more straight sides.
5. A circle is / is not a *polygon*.
6. A triangle / rectangle is a *polygon* with three sides.
7. The sides of a *polygon* are curved / straight .
8. Two / Three sides of *polygon* meet at the same point.

Cross out the figure(s) that are NOT *polygons*.

9. 

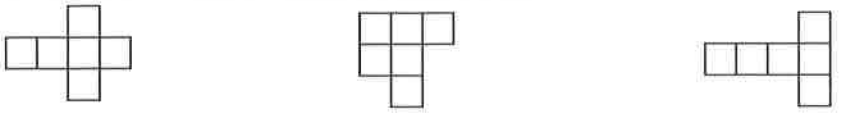
10. 

11. 

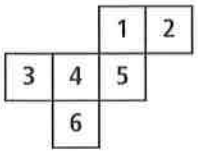
Underline the correct word(s) to complete the sentence.

12. A *net* is a two-dimensional / three-dimensional diagram that you can fold to form a two-dimensional / three-dimensional figure.

13. Circle the *net* that you can NOT fold into a cube.



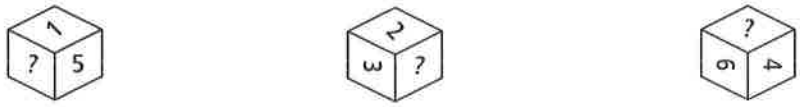
Use the net of a cube at the right for Exercises 14 and 15.



14. Suppose you fold the net into a cube. What number will be opposite each face?

1 _____ 3 _____ 4 _____

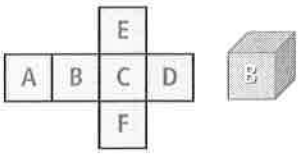
15. Suppose you fold the net into a cube. What number is missing from each view?



_____ _____ _____

Problem 1 Identifying a Solid From a Net

Got It? **The net at the right folds into the cube shown. Which letters will be on the top and right side of the cube?**



16. Four of the five other letters will touch some side of Face B when the net is folded into a cube. Cross out the letter of the side that will NOT touch some side of Face B.

A C D E F

17. Which side of the cube will that letter be on? Circle your answer.

Top Bottom Right Left Back

18. Use the net. Which face is to the right of Face B? How do you know?

_____

_____

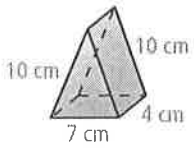
19. Use the net. Which face is on the top of the cube? How do you know?

_____

_____

Problem 2 Drawing a Net From a Solid

Got It? What is a net for the figure at the right? Label the net with its dimensions.



Write T for *true* or F for *false*.

___ **20.** Three of the faces are rectangles.

___ **21.** Four of the faces are triangles.

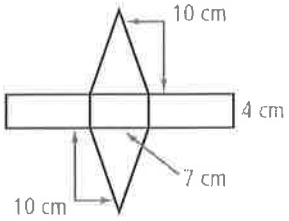
___ **22.** The figure has five faces in all.

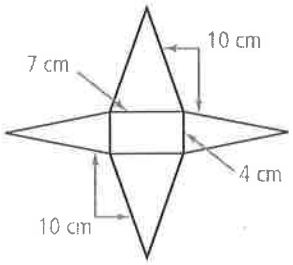
23. Now write a description of the net.

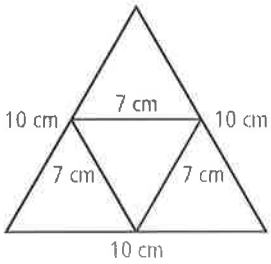
_____

_____

24. Circle the net that represents the figure above.

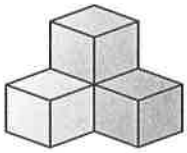






Problem 3 Isometric Drawing

Got It? What is an isometric drawing of this cube structure?

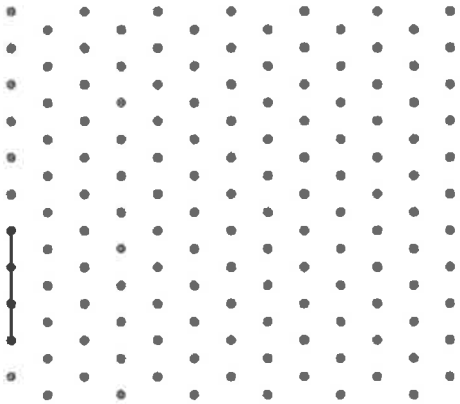


25. The cube structure has

_____ edges that you can see and

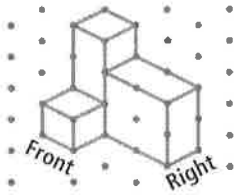
_____ vertices that you can see.

26. The isometric dot paper shows 2 vertices and 1 edge of the cube structure. Complete the isometric drawing.



Problem 4 Orthographic Drawing

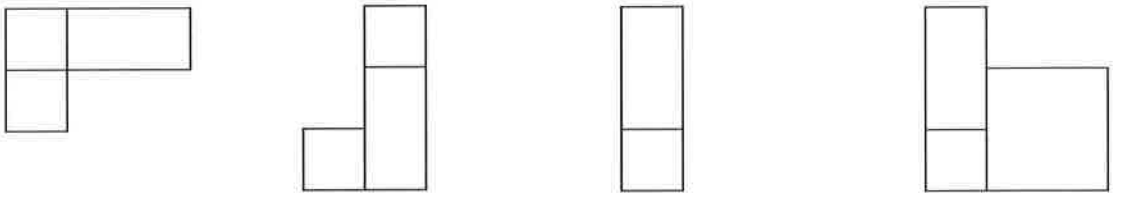
Got It? What is the orthographic drawing for this isometric drawing?



27. Underline the correct word to complete the sentence.

If you built the figure out of cubes, you would use seven / eight cubes

28. Cross out the drawing below that is NOT part of the orthographic drawing. Then label each remaining drawing. Write *Front, Right,* or *Top.*

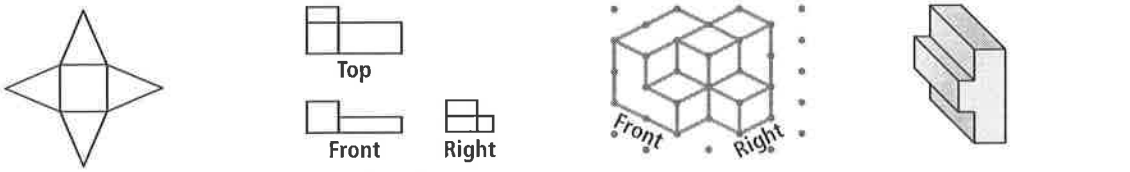


_____ _____ _____ _____

Lesson Check • Do you UNDERSTAND?

Vocabulary Tell whether each drawing is *isometric, orthographic,* a *net,* or *none.*

29. Write *dot paper, one view, three views* or *none.* Then label each figure.



_____ _____ _____ _____

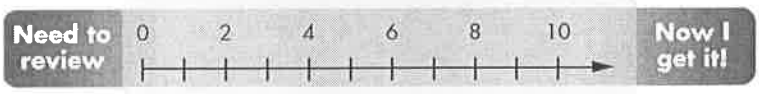
_____ _____ _____ _____

Math Success

Check off the vocabulary words that you understand.

☐ net ☐ isometric drawing ☐ orthographic drawing

Rate how well you can *use nets, isometric drawings, and orthographic drawings.*

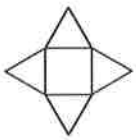
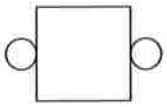
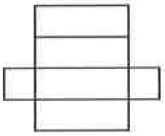


1-2 Points, Lines, and Planes

Vocabulary

Review

Draw a line from each *net* in Column A to the three-dimensional figure it represents in Column B.

Column A	Column B
1. 	
2. 	
3. 	

Vocabulary Builder

conjecture (noun, verb) **kun JEK chur**

Main Idea: A **conjecture** is a guess or a prediction.

Definition: A **conjecture** is a conclusion reached by using inductive reasoning.

Use Your Vocabulary

Write *noun* or *verb* to identify how the word *conjecture* is used in each sentence.

4. You make a *conjecture* that your volleyball team will win. _____

5. Assuming that your sister ate the last cookie is a *conjecture*. _____

6. You *conjecture* that your town will build a swimming pool. _____

take note

Key Concept Undefined and Defined Terms

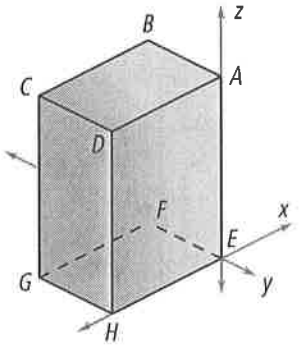
Write the correct word from the list on the right. Use each word only once.

	Undefined or Defined Term	Diagram	Name
7.	_____	A	A
8.	_____	ℓ, B, A	$\overleftrightarrow{AB}$
9.	_____	P, A, B, C	P
10.	_____	A, B	$\overline{AB}$
11.	_____	A, B	$\overrightarrow{AB}$
12.	_____	A, C, B	$\overrightarrow{CA}$, $\overrightarrow{CB}$

line
opposite rays
plane
point
ray
segment

Draw a line from each item in Column A to its description in Column B.

Column A	Column B
13. plane *HGE*	intersection of $\overline{AB}$ and line *z*
14. $\overline{BF}$	plane *AEH*
15. plane *DAE*	line through points *F* and *E*
16. line *y*	intersection of planes *ABF* and *CGF*
17. point *A*	plane containing points *E*, *F*, and *G*



take note

Postulates 1-1, 1-2, 1-3, and 1-4

18. Complete each postulate with *line, plane,* or *point.*

Postulate 1-1 Through any two points there is exactly one __?__. _____

Postulate 1-2 If two distinct lines intersect, then they intersect in exactly one __?__. _____

Postulate 1-3 If two distinct planes intersect, then they intersect in exactly one __?__. _____

Postulate 1-4 Through any three noncollinear points there is exactly one __?__. _____

Write P if the statement describes a *postulate* or U if it describes an *undefined term*.

___ **19.** A point indicates a location and has no size.

___ **20.** Through any two points there is exactly one line.

___ **21.** A line is represented by a straight path that has no thickness and extends in two opposite directions without end.

___ **22.** If two distinct planes intersect, then they intersect in exactly one line.

___ **23.** If two distinct lines intersect, then they intersect in exactly one point.

___ **24.** Through any three nontcollinear points there is exactly one plane.

Problem 2 Naming Segments and Rays

Got It? **Reasoning $\overrightarrow{EF}$ and $\overrightarrow{FE}$ form a line. Are they opposite rays? Explain.**

For Exercises 25–29, use the line below.

25. Draw and label points E and F. Then draw $\overrightarrow{EF}$ in one color and $\overrightarrow{FE}$ in another color.

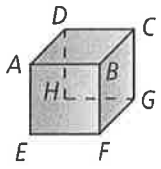
26. Do $\overrightarrow{EF}$ and $\overrightarrow{FE}$ share an endpoint? Yes / No

27. Do $\overrightarrow{EF}$ and $\overrightarrow{FE}$ form a line? Yes / No

28. Are $\overrightarrow{EF}$ and $\overrightarrow{FE}$ opposite rays? Yes / No

29. Explain your answer to Exercise 28.

Problem 3 Finding the Intersection of Two Planes



Got It? **Each surface of the box at the right represents part of a plane. What are the names of two planes that intersect in $\overleftrightarrow{BF}$?**

30. Circle the points that are on $\overleftrightarrow{BF}$ or in one of the two planes.

A *B* *C* D *E* *F* *G* H

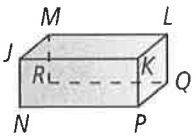
31. Circle another name for plane *BFG*. Underline another name for plane *BFE*.

ABF *BCD* *BCG* *CDH* *FGH*

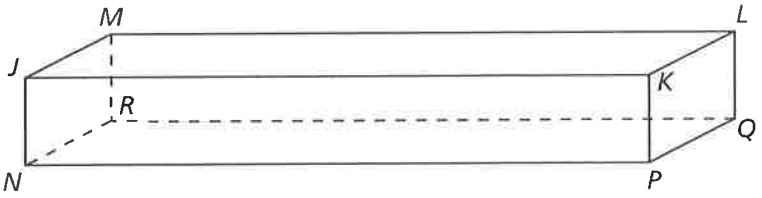
32. Now name two planes that intersect in $\overleftrightarrow{BF}$.

Problem 4 Using Postulate 1–4

Got It? What plane contains points *L*, *M*, and *N*? Shade the plane.



33. Use the figure below. Draw $\overline{LM}$, $\overline{LN}$, and $\overline{MN}$ as dashed segments. Then shade plane *LMN*.



Underline the correct word to complete the sentence.

34. $\overline{LM}$, $\overline{LN}$, and $\overline{MN}$ form a triangle / rectangle .

35. Name the plane.

_____

Lesson Check • Do you UNDERSTAND?

Are $\overrightarrow{AB}$ and $\overrightarrow{BA}$ the same ray? Explain.

Underline the correct symbol to complete each sentence.

36. The endpoint of $\overrightarrow{AB}$ is *A* / *B* .

37. The endpoint of $\overrightarrow{BA}$ is *A* / *B* .

38. Use the line. Draw and label points *A* and *B*. Then draw $\overrightarrow{AB}$ and $\overrightarrow{BA}$.

39. Are $\overrightarrow{AB}$ and $\overrightarrow{BA}$ the same ray? Explain.

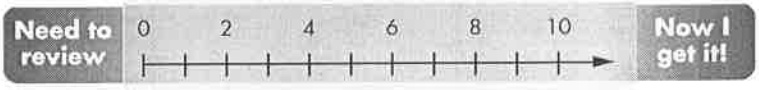
_____

Math Success

Check off the vocabulary words that you understand.

☐ point ☐ line ☐ plane ☐ segment ☐ ray ☐ postulate ☐ axiom

Rate how well you *understand points, lines, and planes.*



1-3 Measuring Segments

Vocabulary

Review

Draw an example of each.

1. *point*
2. $\overleftrightarrow{AB}$
3. $\overrightarrow{DF}$

Vocabulary Builder

segment (noun) SEG munt

Definition: A **segment** is part of a line that consists of two endpoints and all points between them.

Main Idea: You name a **segment** by its endpoints.

segment HJ

Use Your Vocabulary

Complete each sentence with *endpoint, endpoints, line,* or *points.*

4. A *ray* has one ? . _____
5. A *line* contains infinitely many ? . _____
6. A *segment* has two ? . _____
7. A *segment* is part of a ? . _____

Place a check ✓ if the phrase describes a *segment*. Place an ✗ if it does not.

___ 8. Earth's equator ___ 9. the right edge of a book's cover ___ 10. one side of a triangle

take note

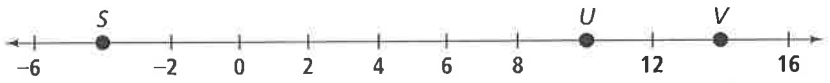
Postulate 1-5 Ruler Postulate

Every point on a line can be paired with a real number, called the *coordinate* of the point.

Problem 1 Measuring Segment Lengths

Got It? What are UV and SV on the number line?

11. Label each point on the number line with its coordinate.



12. Find UV and SV. Write a justification for each statement.

$UV = |\quad - \quad|$ _____ $SV = |\quad - \quad|$

$UV = |\quad\quad|$ _____ $SV = |\quad\quad|$

$UV =$ _____ $SV =$

take note

Postulate 1–6 Segment Addition Postulate

If three points A, B, and C are collinear and B is between A and C, then $AB + BC = AC$.

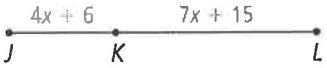
Given points A, B, and C are collinear and B is between A and C, complete each equation.

13. $AB = 5$ and $BC = 4$, so $AB + BC =$ $\quad+\quad$ and $AC =$.

14. $AC = 12$ and $BC = 7$, so $AC - BC =$ $\quad-\quad$ and $AB =$.

Problem 2 Using the Segment Addition Postulate

Got It? In the diagram, $JL = 120$. What are JK and KL?



15. Write a justification for each statement.

$JK + KL = JL$ _____

$(4x + 6) + (7x + 15) = 120$ _____

$11x + 21 = 120$ _____

$11x = 99$ _____

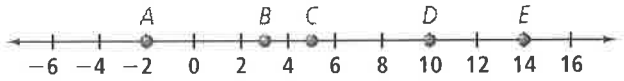
$x = 9$ _____

16. You know that $JK = 4x + 6$ and $KL = 7x + 15$. Use the value of x from Exercise 15 to to find JK and KL. Find JK and KL.

17. $JK =$ and $KL =$.

Problem 3 Comparing Segment Lengths

Got It? Use the diagram below. Is $\overline{AB}$ congruent to $\overline{DE}$?



In Exercises 18 and 19, circle the expression that completes the equation.

18. $AB = \blacksquare$

$-2 - 2$ $\quad |-2 - 2|$ $\quad |-2 - 3|$ $\quad |-2 - 4|$

19. $DE = \blacksquare$

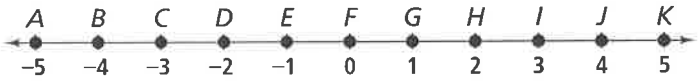
$3 - 14$ $\quad 10 + 14$ $\quad |5 - 14|$ $\quad |10 - 14|$

20. After simplifying, $AB =$ _____ and $DE =$ _____.

21. Is $\overline{AB}$ congruent to $\overline{DE}$? Explain.

The *midpoint* of a segment is the point that divides the segment into two congruent segments.

Use the number line below for Exercises 22–25.



22. Point _____ is halfway between points B and J.

23. The midpoint of $\overline{AE}$ is point _____.

24. Point _____ divides $\overline{EK}$ into two congruent segments.

25. Find the midpoint of each segment. Then write the coordinate of the midpoint.

	$\overline{AG}$	$\overline{DH}$	$\overline{AK}$
Midpoint			
Coordinate			

26. Find the coordinate of the midpoint of each segment.

	segment with endpoints at -4 and 2	segment with endpoints at -2 and 4
Coordinate of midpoint		

27. Circle the expression that relates the coordinate of the midpoint to the coordinates of the endpoints.

$x_1 + x_2$ $\quad \frac{(x_1 + x_2)}{2}$ $\quad \frac{(x_1 - x_2)}{2}$

Problem 4 Using the Midpoint

Got It? U is the midpoint of $\overline{TV}$. What are TU, UV, and TV?

28. Use the justifications at the right to complete the steps below.

Step 1 Find x.

$TU = UV$		Definition of midpoint
$8x + 11 =$		Substitute.
$8x + 11 +$ $=$	$+$	Add 1 to each side.
$=$		Subtract $8x$ from each side.
$= x$		Divide each side by 4.

Step 2 Find TU and UV.

$TU = 8 \cdot$ $+ 11 =$ Substitute for x.

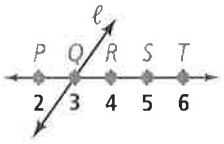
$UV = 12 \cdot$ $- 1 =$ Substitute.

Step 3 Find TV.

$TV = TU + UV$	Definition of midpoint
$=$ $+$	Substitute.
$=$	Simplify.

Lesson Check • Do you UNDERSTAND?

Vocabulary Name two segment bisectors of $\overline{PR}$.



Underline the correct word or symbol to complete each sentence.

29. A bisector / midpoint may be a point, line, ray, or segment.

30. The midpoint of $\overline{PR}$ is point P / Q / R.

31. Line ℓ passes through point P / Q / R.

32. Two bisectors of $\overline{PR}$ are and .

Math Success

Check off the vocabulary words that you understand.

☐ congruent segments ☐ coordinate ☐ midpoint ☐ segment bisector

Rate how well you can *find lengths of segments.*

1-4 Measuring Angles

Vocabulary

Review

Write T for *true* or F for *false.*

_____ 1. $\overrightarrow{AB}$ names a *ray* with endpoints *A* and *B*.

_____ 2. You name a *ray* by its endpoint and another point on the *ray*.

Vocabulary Builder

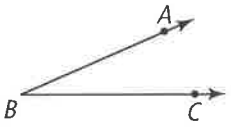
angle (noun, verb) ANG gul

Other Word Forms: angular (adjective), angle (verb), angled (adjective)

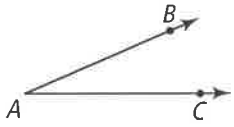
Definition: An **angle** is formed by two rays with the same endpoint.

Use Your Vocabulary

Name the rays that form each *angle*.

3. 

and

4. 

and

take note

Key Concept Angle

Definition

An **angle** is formed by two rays with the same endpoint.

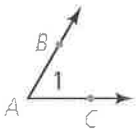
The rays are the **sides** of the angle. The endpoint is the **vertex** of the angle.

How to Name It

You can name an angle by

- its vertex
- a point on each ray and the vertex
- a number

Diagram



For Exercises 5–8, use the diagram in the Take Note on page 14. Name each part of the angle.

5. the *vertex*

6. two points that are NOT the vertex

and

7. the *sides*

$\overrightarrow{\quad}$ and $\overrightarrow{\quad}$

8. Name the angle three ways.

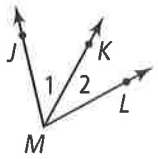
by its *vertex*

by a point on each side and the vertex

by a number

Problem 1 Naming Angles

Got It? **What are two other names for $\angle KML$?**



9. Cross out the ray that is NOT a ray of $\angle KML$.

$\overrightarrow{MK}$ $\overrightarrow{MJ}$ $\overrightarrow{ML}$

10. Circle all the possible names of $\angle KML$.

$\angle 1$ $\angle 2$ $\angle JKL$ $\angle JMK$ $\angle JML$ $\angle KMJ$ $\angle LMK$

Take Note

Key Concept Types of Angles

11. Draw your own example of each type of angle.

acute	right	obtuse	straight
$0 < x <$	$x =$	$< x <$	$x =$

In the diagram, $m\angle ABC = 70$ and $m\angle BFE = 90$. Describe each angle as *acute, right, obtuse* or *straight*. Give an angle measure to support your description.

12. $\angle ABC$

_____

13. $\angle CBD$

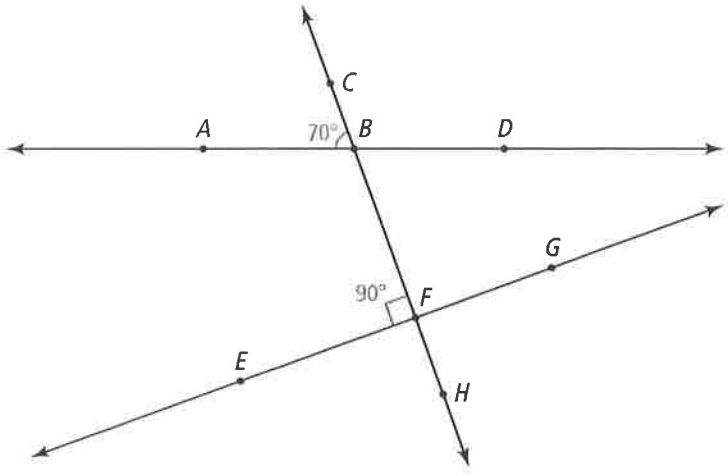
_____

14. $\angle CFG$

_____

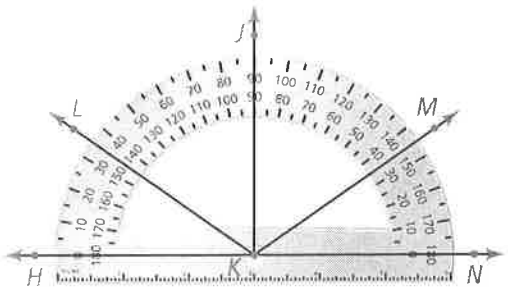
15. $\angle CFH$

_____



Problem 2 Measuring and Classifying Angles

Got It? What are the measures of $\angle LKH$, $\angle HKN$, and $\angle MKH$ in the art below? Classify each angle as *acute, right, obtuse,* or *straight.*

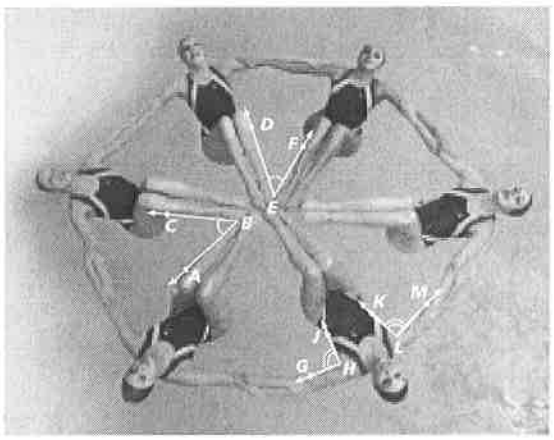


16. Write the measure of each angle. Then classify each angle.

$\angle LKH$	$\angle HKN$	$\angle MKH$
°	°	°
_____	_____	_____

Problem 3 Using Congruent Angles

Got It? Use the photo at the right. If $m\angle ABC = 49$, what is $m\angle DEF$?



17. $\angle ABC$ has angle mark(s).

18. The other angle with the same number of marks is $\angle$.

19. Underline the correct word to complete the sentence.

The measure of $\angle ABC$ and the measure of the angle in Exercise 18 are equal / unequal .

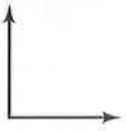
20. $m\angle DEF =$

take note

Postulate 1-8 Angle Addition Postulate

If point B is in the interior of $\angle AOC$, then $m\angle AOB + m\angle BOC = m\angle AOC$.

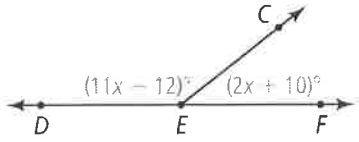
21. Draw $\angle ABT$ with point L in the interior and $\angle ABL$ and $\angle LBT$.



22. Complete: $m\angle ABL + m\angle$ $= m\angle$

Problem 4 Using the Angle Addition Postulate

Got It? $\angle DEF$ is a straight angle. What are $m\angle DEC$ and $m\angle CEF$?



23. Write a justification for each statement.

$m\angle DEF = 180$ _____

$m\angle DEC + m\angle CEF = 180$ _____

$(11x - 12) + (2x + 10) = 180$ _____

$13x - 2 = 180$ _____

$13x = 182$ _____

$x = 14$ _____

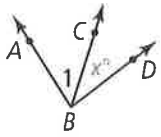
24. Use the value of x to find $m\angle DEC$ and $m\angle CEF$.

$m\angle DEC = 11x - 12 = 11(\quad) - 12 =$

$m\angle CEF =$

Lesson Check • Do you know How?

Algebra If $m\angle ABD = 85$, what is an expression to represent $m\angle ABC$?



25. Use the justifications at the right to complete the statements below.

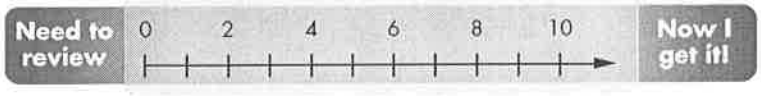
$m\angle ABC + m\angle CBD = m\angle ABD$	Angle Addition Postulate
$m\angle ABC +$ $=$	Substitute.
$m\angle ABC +$ $-$ $=$ $-$	Subtract from each side.
$m\angle ABC =$	Simplify.

Math Success

Check off the vocabulary words that you understand.

☐ acute angle ☐ obtuse angle ☐ right angle ☐ straight angle

Rate how well you can *classify angles*.



1-5 Exploring Angle Pairs

Vocabulary

Review

Use a word from the list below to complete each sentence. Use each word just once.

interior rays vertex

1. The _?_ of an *angle* is the region containing all of the points between the two sides of the angle. _____

2. When you use three points to name an *angle*, the _?_ must go in the middle. _____

3. The sides of $\angle QRS$ are _?_ RS and RQ. _____

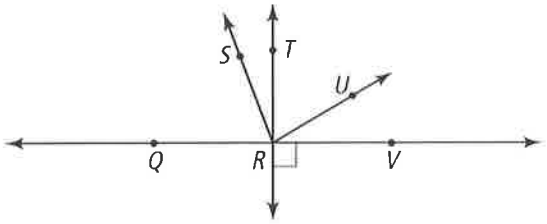
Use the figure below for Exercises 4–7. Identify each angle as *acute*, *right*, *obtuse*, or *straight*.

4. $\angle SRV$ _____

5. $\angle TRS$ _____

6. $\angle TRQ$ _____

7. $\angle VRQ$ _____



Vocabulary Builder

conclusion (noun) **kun KLOO zhun**

Other Word Forms: conclude (verb)

Definition: A **conclusion** is the end of an event or the last step in a reasoning process.

Use Your Vocabulary

Complete each sentence with *conclude* or *conclusion*.

8. If it rains, you can _?_ that soccer practice will be canceled. _____

9. The last step of the proof is the _?_. _____

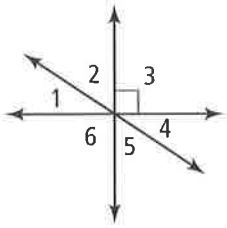
Take Note

Key Concept Types of Angle Pairs

Angle Pair	Definition
Adjacent angles	Two coplanar angles with a common side, a common vertex, and no common interior points
Vertical angles	Two angles whose sides are opposite rays
Complementary angles	Two angles whose measures have a sum of 90
Supplementary angles	Two angles whose measures have a sum of 180

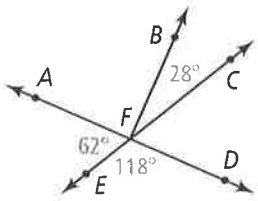
Draw a line from each word in Column A to the angles it describes in Column B.

Column A	Column B
10. supplementary	$\angle 1$ and $\angle 2$
11. adjacent	$\angle 2$ and $\angle 3$
12. vertical	$\angle 2$ and $\angle 5$
13. complementary	$\angle 3$ and $\angle 6$



Problem 1 Identifying Angle Pairs

Got It? **Use the diagram at the right. Are $\angle AFE$ and $\angle CFD$ vertical angles? Explain.**



14. The rays of $\angle AFE$ are $\overrightarrow{FE}$ and $\overrightarrow{FC}$ / $\overrightarrow{FA}$.

15. The rays of $\angle CFD$ are $\overrightarrow{FC}$ and $\overrightarrow{FD}$ / $\overrightarrow{FA}$.

Complete each statement.

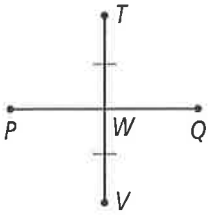
16. $\overrightarrow{FE}$ and _____ are opposite rays.

17. $\overrightarrow{FA}$ and _____ are opposite rays.

18. Are $\angle AFE$ and $\angle CFD$ vertical angles? Yes / No

Problem 2 Making Conclusions From a Diagram

Got It? **Can you conclude that $\overline{TW} \cong \overline{WV}$ from the diagram? Explain.**



19. Circle the items marked as congruent in the diagram.

$\overline{PW}$ and $\overline{WQ}$ $\overline{TW}$ and $\overline{WV}$

$\angle TWQ$ and $\angle PWT$ $\angle TWQ$ and $\angle VWQ$

20. Can you conclude that $\overline{TW} \cong \overline{WV}$? Why or why not?

_____

Take note

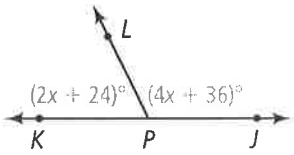
Postulate 1-9 Linear Pair Postulate

If two angles form a linear pair, then they are supplementary.

21. If $\angle A$ and $\angle B$ form a linear pair, then $m\angle A + m\angle B =$.

Problem 3 Finding Missing Angle Measures

Got It? **Reasoning** $\angle KPL$ and $\angle JPL$ are a linear pair, $m\angle KPL = 2x + 24$, and $m\angle JPL = 4x + 36$. How can you check that $m\angle KPL = 64$ and $m\angle JPL = 116$?



22. What is one way to check solutions? Place a ✓ in the box if the response is correct. Place an ✗ in the box if it is incorrect.

☐ Draw a diagram. If it looks good, the solutions are correct.

☐ Substitute the solutions in the original problem statement.

23. Use your answer(s) to Exercise 22 to check the solutions.

24. How does your check show that you found the correct angle measurements?

_____

_____

Problem 4 Using an Angle Bisector to Find Angle Measures

Got It? $\overrightarrow{KM}$ bisects $\angle JKL$. If $m\angle JKL = 72$, what is $m\angle JKM$?

25. Write a justification for each step.

$m\angle JKM = m\angle MKL$ _____

$m\angle JKM + m\angle MKL = m\angle JKL$ _____

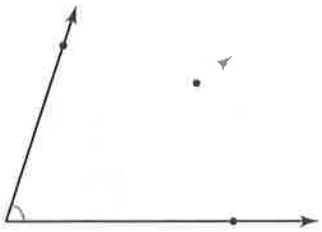
$2m\angle JKM = m\angle JKL$ _____

$m\angle JKM = \frac{1}{2}m\angle JKL$ _____

26. Complete.

$m\angle JKL =$, so $m\angle JKM =$.

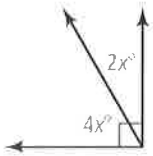
27. Now complete the diagram below.



Lesson Check • Do you UNDERSTAND?

Error Analysis **Your friend calculated the value of x below. What is her error?**

$4x + 2x = 180$
$6x = 180$
$x = 30$



28. Circle the best description of the largest angle in the figure.

acute obtuse right straight

29. Complete: $4x + 2x =$

30. What is your friend's error? Explain.

_____

_____

_____

Math Success

Check off the vocabulary words that you understand.

☐ angle ☐ complementary ☐ supplementary ☐ angle bisector ☐ vertical

Rate how well you can *find missing angle measures*.

1-6 Basic Constructions

Vocabulary

Review

Draw a line from each word in Column A to its symbol or picture in Column B.

Column A	Column B
1. congruent	
2. point	• W
3. ray	
4. vertex	
5. intersection of segments	≅

Vocabulary Builder

perpendicular (adjective) **pur pun DIK yoo lur**

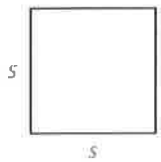
Definition: **Perpendicular** means at right angles to a given line or plane.

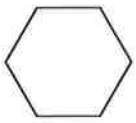
Example: Each corner of this paper is formed by **perpendicular** edges of the page.

Non-Examples: Acute, obtuse, and straight angles do not have **perpendicular** rays.

Use Your Vocabulary

6. Circle the figure that shows *perpendicular* segments.

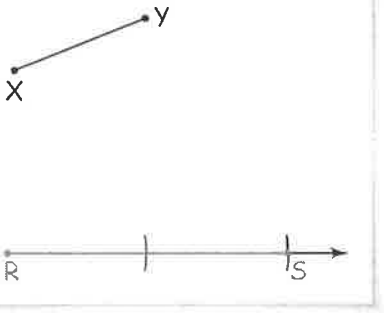




Problem 1 Constructing Congruent Segments

Got It? Use a straightedge to draw $\overline{XY}$. Then construct $\overline{RS}$ so that $RS = 2XY$.

7. A student did the construction at the right. Describe each step of the construction.



Step 1 _____

Step 2 _____

Step 3 _____

_____

Step 4 _____

Step 5 _____

Problem 2 Constructing Congruent Angles

Got It? Construct $\angle F$ so that $m\angle F = 2m\angle B$ at the right.

8. Use *arc* or *compass* to complete the sentence(s) in each step. In the large box, construct $\angle F$.

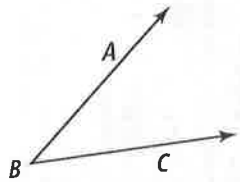
Step 1 Use a straightedge to construct a ray with endpoint *F*.

Step 2 With your __?__ point on vertex *B*, draw a(n) __?__ that intersects both sides of $\angle B$. Label the points of intersection *A* and *C*.

_____

Step 3 Use the same compass setting. Put the __?__ point on point *F*. Draw a long __?__ and label its intersection with the ray as *S*.

_____



Step 4 Open the __?__ to the length of $\overline{AC}$. With the compass point on point *S*, draw an __?__. Label where this arc intersects the other arc as point *T*.

_____

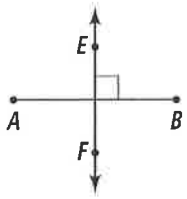
Step 5 Use the same compass setting. Put the __?__ point on point *T*. Draw an __?__ and label its intersection with the first __?__ as point *R*.

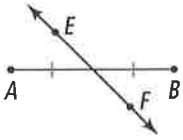
_____

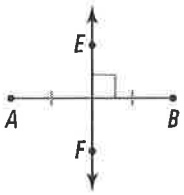
Step 6 Draw $\overrightarrow{FR}$.

A *perpendicular bisector* of a segment is a line, segment, or ray that is perpendicular to the segment at its midpoint.

9. Circle the drawing that shows the perpendicular bisector of a segment.



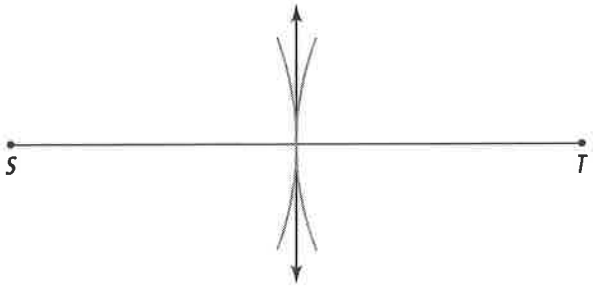




Problem 3 Constructing the Perpendicular Bisector

Got It? Draw $\overline{ST}$. Construct its perpendicular bisector.

10. Error Analysis A student's construction of the perpendicular bisector of $\overline{ST}$ is shown below. Describe the student's error.



11. Do the construction correctly in the box below.

X

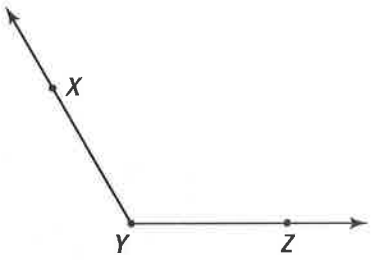
S T

Y

Problem 4 Constructing the Angle Bisector

Got It? Draw obtuse $\angle XYZ$. Then construct its bisector $\overrightarrow{YP}$.

12. Obtuse $\angle XYZ$ is drawn in the box at the right. Complete the flowchart and do each step of the construction.



Step 1 Put the compass point on vertex ____. Draw an arc that intersects the sides of ____. Label the points of intersection A and B.

↓

Step 2 Put the compass point on point A and draw an arc. With the same / a different compass setting, draw an arc using point B. Be sure the arcs intersect. Label the point where the two arcs intersect P.

↓

Step 3 Draw ____.

Lesson Check • Do you UNDERSTAND?

Vocabulary What two tools do you use to make constructions?

Draw a line from each task in Column A to the tool used in Column B.

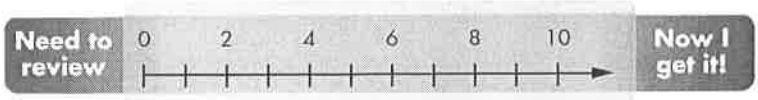
Column A	Column B
13. measure lines	compass
14. measure angles	protractor
15. construct arcs	ruler
16. construct lines	straightedge

Math Success

Check off the vocabulary words that you understand.

☐ straightedge ☐ compass ☐ construction ☐ perpendicular bisector

Rate how well you can *construct angles and bisectors.*

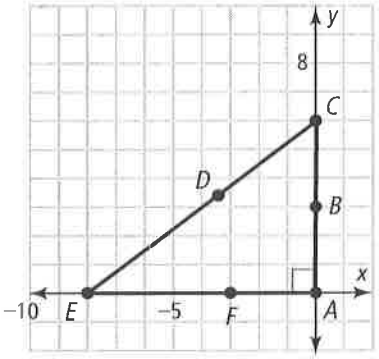


1-7 Midpoint and Distance in the Coordinate Plane

Vocabulary

Review

Use the figure at the right for Exercises 1–6. Write T for *true* or F for *false*.



_____ **1.** Points A and B are both at the *origin*.

_____ **2.** If $AB = BC$, then B is the midpoint of $\overline{AC}$.

_____ **3.** The *midpoint* of $\overline{AE}$ is F.

_____ **4.** The *Pythagorean Theorem* can be used for any triangle.

_____ **5.** Point C is at $(6, 0)$.

_____ **6.** Point E has a *y-coordinate* of -8.

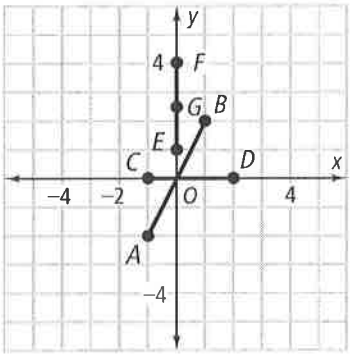
Vocabulary Builder

midpoint (noun) MID poynt

Definition: A *midpoint* of a segment is a point that divides the segment into two congruent segments.

Use Your Vocabulary

Use the figure at the right for Exercises 7–9.



7. The *midpoint* of $\overline{EF}$ is G(,).

8. The *midpoint* of $\overline{AB}$ is (,), or the origin.

9. The *midpoint* of $\overline{CD}$ is (,).

take note

Key Concept Midpoint Formulas

On a Number Line	In the Coordinate Plane
The coordinate of the midpoint M of $\overline{AB}$ with endpoints at a and b is $\frac{a+b}{2}$.	Given $A(x_1, y_1)$ and $B(x_2, y_2)$, the coordinates of the midpoint of $\overline{AB}$ are $M\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Find the coordinate of the midpoint M of each segment with the given endpoints on a number line.

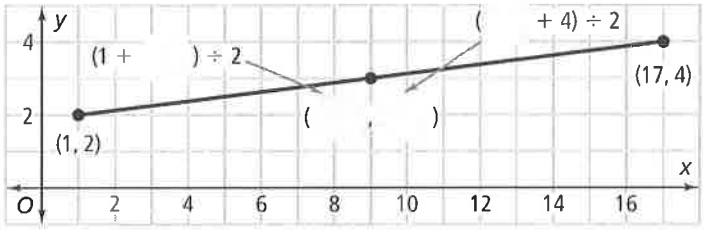
10. endpoints 5 and 9

11. endpoints -3 and 5

12. endpoints -10 and -3

13. endpoints -8 and -1

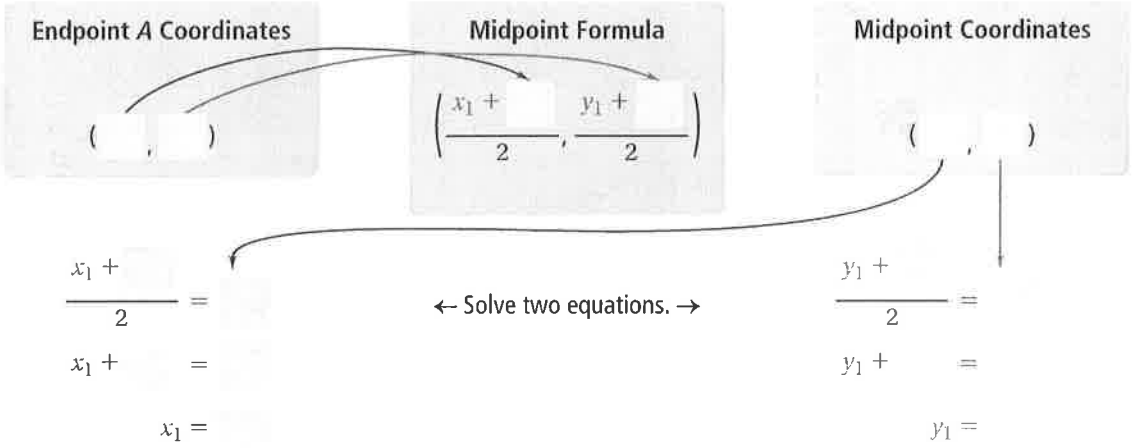
14. Complete the diagram below.



Problem 2 Finding an Endpoint

Got It? **The midpoint of $\overline{AB}$ has coordinates $(4, -9)$. Endpoint A has coordinates $(-3, -5)$. What are the coordinates of B?**

15. Complete the equations below.



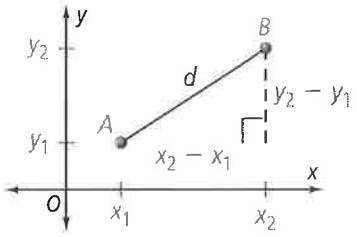
16. The coordinates of endpoint B are ( ).

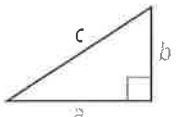
take note

Formula The Distance Formula

The distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$ is $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

The Distance Formula is based on the Pythagorean Theorem.





$a^2 + b^2 = c^2$

Use the diagrams above. Draw a line from each triangle side in Column A to the corresponding triangle side in Column B.

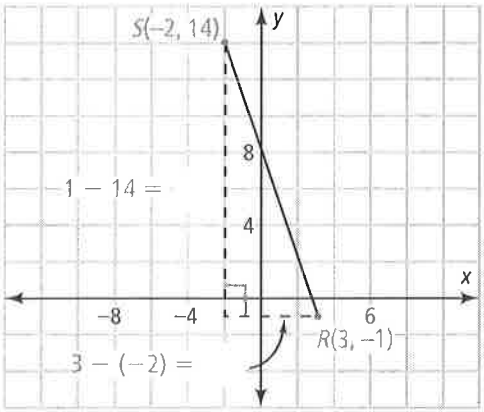
Column A	Column B
17. $y_2 - y_1$	a
18. $x_2 - x_1$	b
19. distance, d	c

Problem 3 Finding Distance

Got It? $\overline{SR}$ **has endpoints** $S(-2, 14)$ **and** $R(3, -1)$**. What is** SR **to the nearest tenth?**

20. Complete the diagram at the right.

21. Let $S(-2, 14)$ be (x_1, y_1) and let $R(3, -1)$ be (x_2, y_2). Use the justifications and complete the steps below to find SR.



$d = \sqrt{(\quad - x_1)^2 + (\quad - y_1)^2}$ Use the Distance Formula.

$SR = \sqrt{(\quad - (-2))^2 + (\quad - 14)^2}$ Substitute.

$= \sqrt{(\quad)^2 + (\quad)^2}$ Subtract.

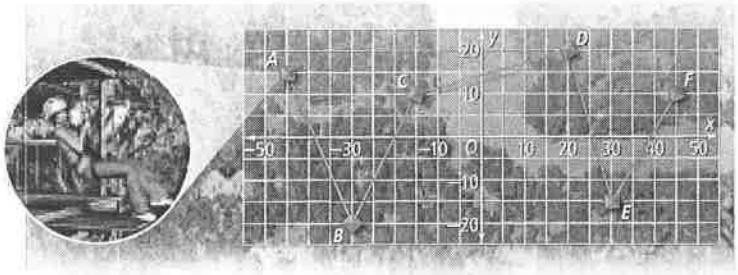
$= \sqrt{\quad + \quad}$ Simplify powers.

$= \sqrt{\quad}$ Add.

$\approx$ Use a calculator.

Problem 4 Finding Distance

Got It? On a zip-line course, you are harnessed to a cable that travels through the treetops. You start at Platform *A* and zip to each of the other platforms. How far do you travel from Platform *D* to Platform *E*? Each grid unit represents 5 m.



22. The equation is solved below. Write a justification for each step.

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

$$DE = \sqrt{(30 - 20)^2 + (-15 - 20)^2}$$ _____

$$= \sqrt{10^2 + (-35)^2} = \sqrt{100 + 1225} = \sqrt{1325}$$ _____

23. To the nearest tenth, you travel about _____ m.

Lesson Check • Do you UNDERSTAND?

Reasoning How does the Distance Formula ensure that the distance between two different points is positive?

24. A radical symbol with no sign in front of it indicates a positive / negative square root.

25. Now answer the question.

_____

Math Success

Check off the vocabulary words that you understand.

☐ midpoint ☐ distance ☐ coordinate plane

Rate how well you can *use the Midpoint and Distance Formulas.*

Need to review 0 2 4 6 8 10 Now I get it!

1-8 Perimeter, Circumference, and Area

Vocabulary

Review

1. Cross out the shapes that are NOT *polygons*.

2. Write the name of each figure. Use each word once.

triangle square rectangle circle

_____ _____ _____ _____

Vocabulary Builder

consecutive (adjective) **kun SEK yoo tiv**

Definition: **Consecutive** means following in order without interruption.

Related Word: sequence

Example: The numbers 2, 4, 6, 8, . . . are **consecutive** even numbers.

Non-Example: The numbers 1, 3, 2, 5, 4, . . . are NOT **consecutive** numbers.

Use Your Vocabulary

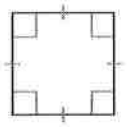
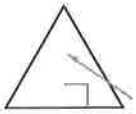
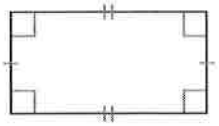
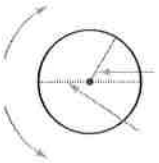
Draw a line from each sequence of letters in Column A to the next *consecutive* letter in Column B.

Column A	Column B
3. L, M, N, O, . . .	R
4. V, U, T, S, . . .	I
5. A, C, E, G....	P

take note

Key Concept Perimeter, Circumference, and Area

6. Label the parts of each of the figures below.

Square	Triangle	Rectangle	Circle
			
$P = 4s$	$P = a + b + c$	$P = 2b + 2h$	$C = \pi d$ or $C = 2\pi r$
$A = s^2$	$A = \frac{1}{2}bh$	$A = bh$	$A = \pi r^2$

Problem 1 Finding the Perimeter of a Rectangle

Got It? **You want to frame a picture that is 5 in. by 7 in. with a 1-in.-wide frame. What is the perimeter of the picture?**

7. The picture is _____ in. by _____ in.

8. Circle the formula that gives the perimeter of the picture.

$P = 4s$ $P = 2b + 2h$ $P = a + b + c$ $C = \pi d$

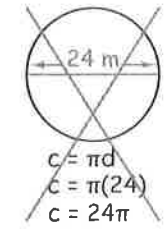
9. Solve using substitution.

10. The perimeter of the picture is _____ in.

Problem 2 Finding Circumference

Got It? **What is the circumference of a circle with radius 24 m in terms of π?**

11. **Error Analysis** At the right is one student's solution. What error did the student make?



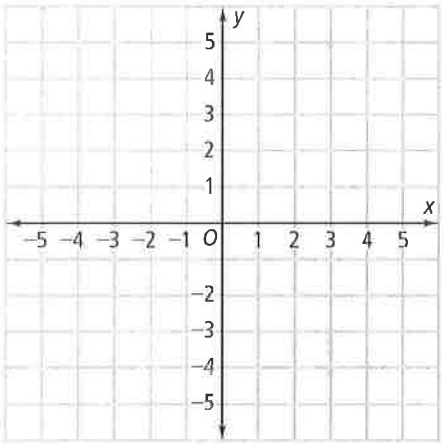
_____

_____

12. Find the correct circumference.

Problem 3 Finding Perimeter in the Coordinate Plane

Got It? Graph quadrilateral $JKLM$ with vertices $J(-3, -3)$, $K(1, -3)$, $L(1, 4)$, and $M(-3, 1)$. What is the perimeter of $JKLM$?



13. Graph the quadrilateral on the coordinate plane at the right.

14. Use the justifications at the right to find the length of each side.

$JK = |-3 - 1|$ Use the Ruler Postulate.

$=$ Simplify.

$KL = |4 -$ $|$ Use the Ruler Postulate.

$=$ Simplify.

$JM = |-3 -$ $|$ Use the Ruler Postulate.

$=$ Simplify.

$ML = \sqrt{(1 - (-3))^2 + (4 -$ $)^2}$ Use the Distance Formula.

$= \sqrt{(\quad)^2 + 3^2}$ Simplify within parentheses.

$= \sqrt{(\quad) + (\quad)}$ Simplify powers.

$= \sqrt{(\quad)}$ Add.

$=$ Take the square root.

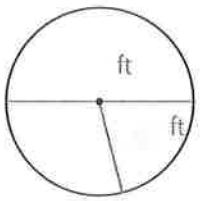
15. Add the side lengths to find the perimeter.

$JK + KL + JM + ML =$ $+$ $+$ $+$ $=$

16. The perimeter of $JKLM$ is units.

Problem 5 Finding Area of a Circle

Got It? The diameter of a circle is 14 ft. What is its area in terms of π?



17. Label the diameter and radius of the circle at the right.

18. Use the formula $A = \pi r^2$ to find the area of the circle in terms of π.

19. The area of the circle is π ft^2.

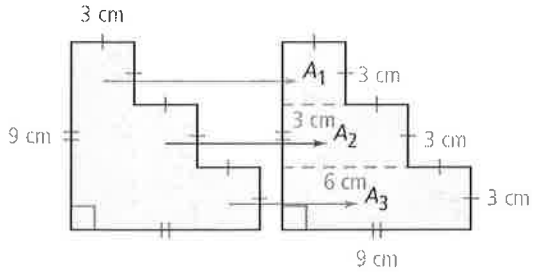
take note

Key Concept Postulate 1-10 Area Addition Postulate

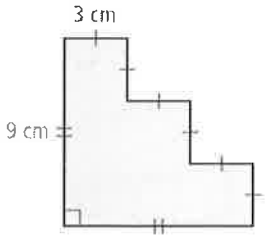
20. The area of a region is the sum / difference of the areas of its nonoverlapping parts.

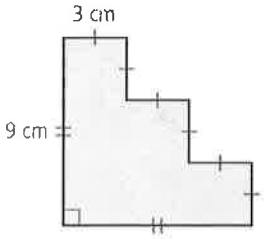
Problem 6 Finding Area of an Irregular Shape

Got It? Reasoning The figure below shows one way to separate the figure at the left. What is another way to separate the figure?



21. Draw segments to show two different ways to separate the figure. Separate the left-hand figure into three squares.





Lesson Check • Do you UNDERSTAND?

Compare and Contrast Your friend can't remember whether $2\pi r$ computes the circumference or the area of a circle. How would you help your friend? Explain.

22. Underline the correct word(s) to complete each sentence.

Area involves units / square units .

Circumference involves units / square units .

The formula $2\pi r$ relates to area / circumference because it involves units / square units .

Math Success

Check off the vocabulary words that you understand.

☐ perimeter ☐ area

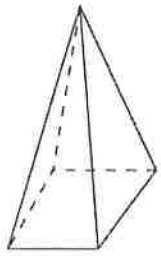
Rate how well you can *find the area of irregular shapes.*

Name _____ Class _____ Date _____

1-1 Think About a Plan

Nets and Drawings for Visualizing Geometry

Multiple Representations There are eight different nets for the solid shown at the right. Draw as many of them as you can. (*Hint:* Two nets are the same if you can rotate or flip one to match the other.)

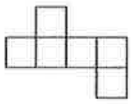


Understanding the Problem

1. What is the net of a solid?

_____

2. What is a result of flipping the net below? Of rotating it?



Planning the Solution

3. Visualize unfolding the solid so that the base shares an edge with all four triangles. Then visualize unfolding the solid so that the base shares an edge with three triangles. Are the nets that result the same? Explain.

_____

4. In Step 3, you saw that a net can have three or four triangles that share an edge with the square base. Are there other possibilities? If so, what are they? Are these the only possibilities?

_____

_____

Finding the Answer

5. Are there other nets that have three or four triangles that share an edge with the square base? Explain.

_____

_____

6. There are four nets that have two triangles that share an edge with the base. For each of these, the triangles may either be on opposite or adjacent sides of the base. Draw each net.

7. How many nets have only one triangle touching the base? Draw as many of them as you can.

Name _____ Class _____ Date _____

1-2 Think About a Plan

Points, Lines, and Planes

Estimation You can represent the hands on a clock at 6:00 as opposite rays. Estimate the other 11 times on a clock that you can represent as opposite rays.

Know

1. Opposite rays are _____.
2. The hands on the clock represent rays. At 6:00, these rays form opposite rays. This means they form a _____.

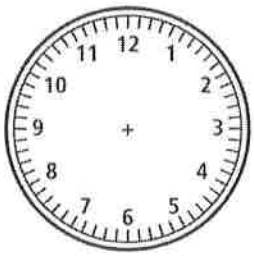
Need

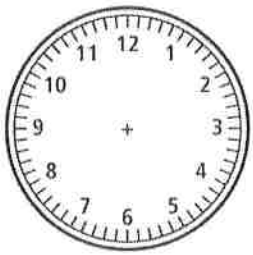
3. To solve the problem I need to find the 11 other times that _____ _____.

Plan

4. When the hour hand is between 1 and 2 o'clock, what will the minute hand be between?

_____





5. On the two clock faces at the right, draw the hands of a clock at 1:35 and at 1:38.

6. At which time, 1:35 or 1:38, do you think opposite rays form? Explain.

_____

_____

_____

7. Complete the table to show all of the times when the hands on a clock represent opposite rays.

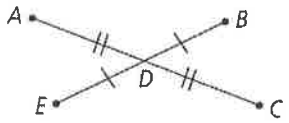
Hour	6	7	8	9	10	11					
Time when opposite rays form	6:00										

Name _____ Class _____ Date _____

1-3 Think About a Plan

Measuring Segments

If $AD = 12$ and $AC = 4y - 36$, find the value of y. Then find AC and DC.



Understanding the Problem

1. What are the two congruence relationships that the diagram shows?

2. What is the value of DC? ☐

3. Write an equation that describes the relationship between AC, DC, and AD.

Planning the Solution

4. How can you use the equation in Exercise 3 above to find the value of y?

_____

_____

Getting an Answer

5. Write an equation for y using the method described in Exercise 4 above.

6. Solve for y.

7. $AC = 4y - 36$. Substitute the value of y to find AC.

8. Check your answer. Does it make the equation that you wrote in Step 5 true? _____

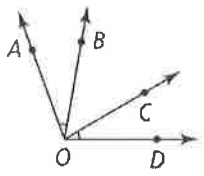
Name _____ Class _____ Date _____

1-4 Think About a Plan

Measuring Angles

Use the diagram at the right. Solve for x. Find the angle measures to check your work.

$m\angle AOB = 4x - 2$, $m\angle BOC = 5x + 10$, $m\angle COD = 2x + 14$



Understanding the Problem

1. The diagram shows that $\angle AOB$ and _____ are congruent.

2. So, $m\angle AOB =$ _____.

Planning the Solution

3. How can you use the information in Step 2 to write an equation for x?

_____

_____

4. Write an equation for x.

_____

Getting an Answer

5. Solve for x.

6. Find the measures of the angles by substituting for x.

$m\angle AOB =$ ☐

$m\angle BOC =$ ☐

$m\angle COD =$ ☐

7. Measure the angles using a protractor to check your answers. Are they reasonable?

_____