

Math 701

Lesson 1 pp. 3-4

Pretest – Geometry Facts

Lesson Preparation

- LightUnit 701 for each student
- Read “To the Teacher” just before page 1 of the LightUnit.

Introduce the LightUnit

Hand each student LightUnit 701. Call attention to page 1, “To the Student,” and make sure they understand how you want them to work through this diagnostic LightUnit. Explain that this LightUnit reviews the math skills they need in order to be successful in Math 702-710.

Students who have never used Sunrise CLE Math before will be able to determine areas in which they are weak so those areas can be strengthened before they attempt new work in the 700 level. Many students allow their math skills to get a little rusty over summer vacation, so even if they have successfully completed Sunrise CLE Math Level 600, this LightUnit will help them brush up on their skills so they are ready to tackle the new level.

If you wish, take a few minutes to also read page 2, “Math in the Work World,” with your students. Each of LightUnits 702-710 continues the theme introduced here. It is not too soon for seventh grade students to begin thinking about the kind of work God wants them to do with the talents and interests He has given them. Many of the story problems and the optional nuggets of information placed inside the illustrations throughout LightUnits 702-710 help students think about the practical aspects of everyday work in which mathematical knowledge is useful.



Math in the Work World

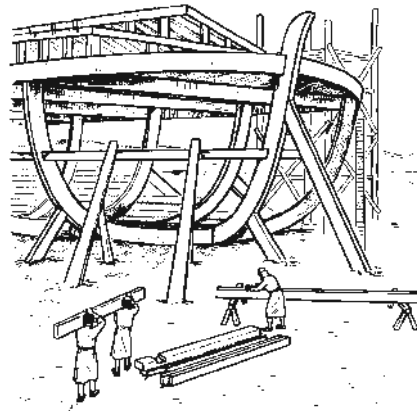


As you begin seventh grade, your life stretches before you. Today, you are making choices and forming habits that will help determine the whole course of your life.

When God created Adam, He gave Adam the responsibility to dress and keep the Garden of Eden. After Adam sinned, God told him that he would need to eat bread “in the sweat of [his] face” (Genesis 3:19). Adam then needed to work hard to grow food. God has also given every one of us the responsibility to work and manage His gifts of life, health, and abundant natural resources. True Christians choose their occupations carefully. They want all of their lives, including work, to bring glory to God.

In Math 702 through Math 710, we will focus on occupations and how the Christian serves God by the lifework he chooses. Colossians 3:23 reminds us, “And whatsoever ye do, do it heartily, as to the Lord, and not unto men.” Although most of us will work for employers for all or part of our lives, our first priority should be pleasing God.

Jesus warned us not to worry and fret about food and drink and clothing, but to “seek ye first the kingdom of God, and his righteousness; and all these things shall be added unto you.” (Matthew 6:33) Our task is to do the work God shows us to do, and God will provide for our needs out of His endless storehouse of good things.



Noah the ark-builder, Joseph the ruler of Egypt, Peter the fisherman, Matthew the tax collector, and many others were chosen to do special work for God. God has special work for you also. Math 700 will teach you some of the skills you will need to do that work well. Think about God’s plan for your life and how this course will equip you to serve Him in the work world.

Lesson

1

14
15

Pretest – Geometry Facts



Ask your teacher to initial the circle before you begin this pretest.

Complete the sentences. (1 point each row.) [7]

1. An acute angle measures between 0° and 90°.
2. A straight angle has 180°.
3. An obtuse angle measures between 90° and 180°.
4. A right triangle has one 90° angle.
5. The three angles of a triangle measure a total of 180°.
6. The four angles of a quadrilateral measure a total of 360°.
7. The four angles formed by a pair of intersecting lines measure a total of 360°.

Write the numbers. (1 point each blank.) [5]

8. A scalene triangle has 0 congruent sides.
9. An equilateral triangle has 3 congruent sides.
10. An isosceles triangle has 2 congruent sides.
11. The fraction we use for π (pi) is $\frac{22}{7}$.
12. A quadrilateral has 4 sides.

Write the formulas. (1 point each.) [3]

13. The formula for the area of a circle is $A = \pi r^2$.
14. The formula for the volume of a rectangular prism is $V = lwh$.
15. The formula for the perimeter of a rectangle or parallelogram is $P = 2l + 2w$.



Ask your teacher to look over this pretest and mark the boxes on page 5.

I can have 15 answers correct.
I must have 14 answers correct to pass.
I have correct.

3

*Working in the LightUnit***Practice Set**


There is no practice set in this lesson.

Pretest – Geometry Facts (page 3).Assign this pretest to the class. Students must have **14** answers correct to pass this test.*Helpful Hints*

➔ If you know your students will have difficulty remembering all the geometry facts covered in this pretest, you may want to give them some oral drill or have them do the practice set in Lesson 2 before they do the pretest.

→ Extra Activity 9 on page 64 of the LightUnit is a good clincher for the geometry facts in Lesson 1. If you wish, you could have the students do this activity before attempting the pretest, either individually or as a class.

Lesson 1

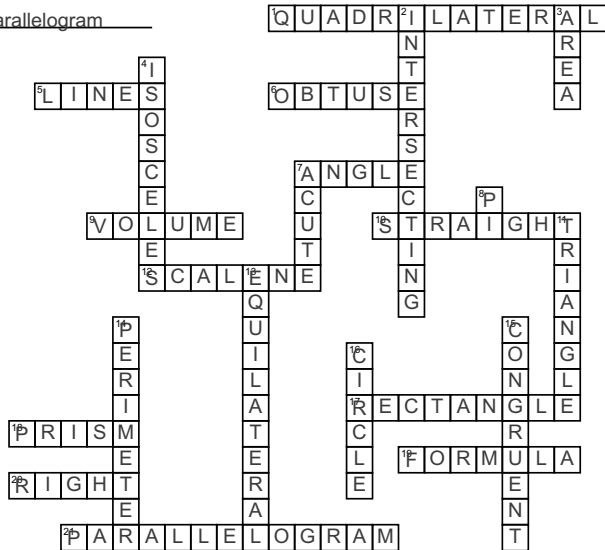


Fascinating Discoveries

Scrambled Geometry

Unscramble the geometry words. Write them in the puzzle. All the words are found on page 3.

<p>ACROSS</p> <p>1. dlqaruallitera _____ quadrilateral _____</p> <p>5. nlies _____ lines _____</p> <p>6. tsuoeb _____ obtuse _____</p> <p>7. elgna _____ angle _____</p> <p>9. mulveo _____ volume _____</p> <p>10. gtsathir _____ straight _____</p> <p>12. Inesaec _____ scalene _____</p> <p>17. tergnacel _____ rectangle _____</p> <p>18. sipmr _____ prism _____</p> <p>19. mofrau _____ formula _____</p> <p>20. gtrih _____ right _____</p> <p>21. plaglmeoarar _____ parallelogram _____</p>	<p>DOWN</p> <p>2. snietctgenri _____ intersecting _____</p> <p>3. raea _____ area _____</p> <p>4. scilesoes _____ isosceles _____</p> <p>7. tuace _____ acute _____</p> <p>8. ip _____ pi _____</p> <p>11. gtanirel _____ triangle _____</p> <p>13. lqteirualea _____ equilateral _____</p> <p>14. mpiertere _____ perimeter _____</p> <p>15. gtunceonr _____ congruent _____</p> <p>16. clicre _____ circle _____</p>
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4

Fascinating Discoveries: Scrambled Geometry.

This optional activity may be assigned to individual students who finish the pretest early, or it could be done together as a class activity.

Lesson

2

- Passed Lesson 1 pretest
Do the pretest on page 7.
Do *Extra Activity* (1, 2, 3, 4, 5, 6, 7, 8, 9).
- Did not pass Lesson 1 pretest
Do all of Lesson 2.

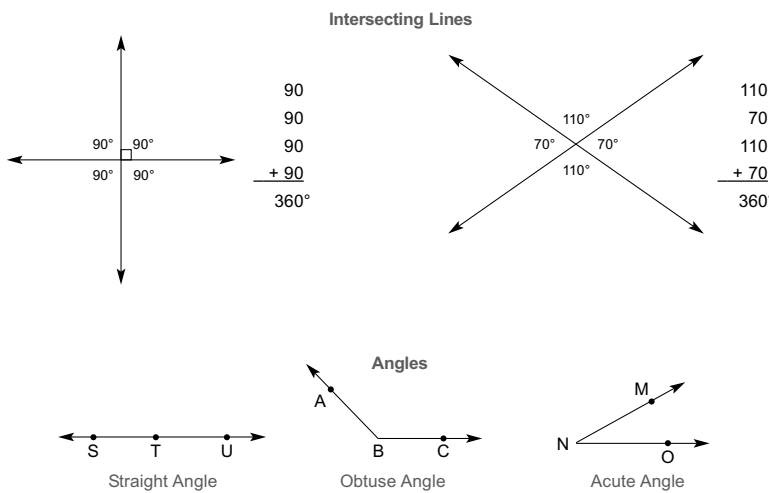
Practice Set – Geometry Facts

Introduced in Math 600, various lessons

If you need some help with geometry facts, use the Intermediate Math Reference Chart. The number after each exercise below tells where this item was introduced. For example, 602-03 means Item 1 was introduced in Math 602, Lesson 3.

Complete the sentences.

1. The four angles formed by a pair of intersecting lines measure a total of 360°. 602-03
2. A straight angle has 180°. 603-03
3. An obtuse angle measures between 90° and 180°. 603-03
4. An acute angle measures between 0° and 90°. 603-03



5

Practice Set—
Geometry Facts

Pretest—Division with
Three-Digit Divisors

Lesson Preparation

- Check students’ pretests from Lesson 1 and mark the appropriate box in the Lesson 2 heading on page 5 in each students’ LightUnit. If you mark the first box indicating that the student passed the first pretest, also circle the number of the extra activity from LightUnit pages 56-64 that you wish him to do this class period.
- Look over the practice set in Lesson 2, and prepare to give extra drill on the facts that students had difficulty remembering. If you need additional teaching material, the five-digit number following each numbered exercise tells where this fact was first introduced in Math 600. For example, 602-03 following No. 1 on page

5 means that this fact was first taught in Math 602, Lesson 3. The extra practice sheets on pages 164-197 of this guidebook may be used for extra review for students who need it. Each lesson plan tells which practice sheets apply to each pretest. You may photocopy these sheets and use them as needed.

- Copy Extra Practice Sheet 1 as needed.

Working in the LightUnit

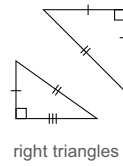
Practice Set – Geometry Facts (for students who did not pass yesterday’s pretest).

If you are keeping your students together, those who passed the pretest on geometry facts may work on the extra activity you chose for them from pages 56-64 while you work with the students who need your help to learn the geometry facts they missed.

Lesson 2

Complete the sentences.

5. The four angles of a quadrilateral measure a total of 360°. 605-07
6. The three angles of a triangle measure a total of 180°. 607-13
7. A right triangle has one 90° angle. 606-13



Quadrilaterals

<p>60 120 60 + 120 360°</p> <p>parallelogram</p>	<p>70 110 90 + 90 360°</p> <p>trapezoid</p>	<p>90 90 90 + 90 360°</p> <p>rectangle</p>
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Triangles

<p>55 30 + 95 180°</p> <p>scalene</p>	<p>60 60 + 60 180°</p> <p>equilateral</p>	<p>40 70 + 70 180°</p> <p>isosceles</p>
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Write the numbers.

8. A quadrilateral has 4 sides. 604-09
9. An equilateral triangle has 3 congruent sides. 602-14
10. A scalene triangle has 0 congruent sides. 602-14
11. An isosceles triangle has 2 congruent sides. 602-14
12. The fraction we use for π (pi) is $\frac{22}{7}$. 603-13

Write the formulas. Refer to your Intermediate Math Reference Chart if you need to.

13. The formula for the area of a circle is $A = \pi r^2$. 606-01
14. The formula for the volume of a rectangular prism is $V = lwh$. 607-09
15. The formula for the perimeter of a rectangle or parallelogram is $P = 2l + 2w$. 606-12

Teacher Notes:

Lesson 2

Pretest – Division with Three-Digit Divisors



Ask your teacher to initial the circle before you begin this pretest.

Divide. Write remainders with *R*. (1 point each.) [8]

$$\begin{array}{r} 9 \text{ R}94 \\ 316 \overline{)2,938} \\ \underline{2844} \\ 94 \end{array}$$

$$\begin{array}{r} 7 \\ 790 \overline{)5,530} \\ \underline{5530} \\ 0 \end{array}$$

$$\begin{array}{r} 49 \text{ R}13 \\ 524 \overline{)25,689} \\ \underline{2096} \\ 4729 \\ \underline{4716} \\ 13 \end{array}$$

$$\begin{array}{r} 8 \text{ R}34 \\ 241 \overline{)1,962} \\ \underline{1928} \\ 34 \end{array}$$

$$\begin{array}{r} 94 \text{ R}57 \\ 378 \overline{)35,589} \\ \underline{3402} \\ 1569 \\ \underline{1512} \\ 57 \end{array}$$

$$\begin{array}{r} 6 \\ 656 \overline{)3,936} \\ \underline{3936} \\ 0 \end{array}$$

$$\begin{array}{r} 46 \\ 965 \overline{)44,390} \\ \underline{3860} \\ 5790 \\ \underline{5790} \\ 0 \end{array}$$

$$\begin{array}{r} 759 \text{ R}611 \\ 632 \overline{)480,299} \\ \underline{4424} \\ 3789 \\ \underline{3160} \\ 6299 \\ \underline{5688} \\ 611 \end{array}$$



Ask your teacher to look over this pretest and mark the boxes on page 8.

I can have 8 answers correct.
I must have 7 answers correct to pass.
I have ____ correct.

Pretest – Division with Three-Digit Divisors
(for all students).

Students must have 7 answers correct to pass this pretest.

Teacher Notes:

Lesson 3 pp. 8-11

Practice Set—Division with Three-Digit Divisors

Pretest—Geometry Applications

Lesson Preparation

- Check the pretest from Lesson 2 and mark the appropriate box on page 8 of each LightUnit.
- Look over the practice set in Lesson 3, and prepare to teach the sections students had difficulty with on the pretest.
- Copy Extra Practice Sheet 2 as needed.
- Make sure each student has a protractor to use for measuring angles.

Lesson 3

Passed Lesson 2 pretest
 Do the pretest on pages 10, 11.
 Do *Extra Activity* (1, 2, 3, 4, 5, 6, 7, 8, 9).

Practice Set – Division with Three-Digit Divisors

Introduced in Math 603, Lesson 13

Division With Multiples of 10, 100, or 1,000

Equal numbers of zeros in both the dividend and the divisor can be canceled before dividing.

$$\begin{array}{r} 9 \\ 3 \overline{) 27} \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{) 270} \end{array}$$

$$\begin{array}{r} 9 \\ 300 \overline{) 2,700} \end{array}$$

$$\begin{array}{r} 9 \\ 3,000 \overline{) 27,000} \end{array}$$

Divide mentally and write the quotients.

$$1. \text{ a. } \begin{array}{r} 6 \\ 200 \overline{) 1,200} \end{array}$$

$$\text{ b. } \begin{array}{r} 8 \\ 700 \overline{) 5,600} \end{array}$$

$$\text{ c. } \begin{array}{r} 5 \\ 500 \overline{) 2,500} \end{array}$$

Introduced in Math 604, Lesson 1

Dividing by Multiples of 100 With Remainders

When the divisor is a multiple of 100, but the dividend does not end with two zeros, there will be a remainder.

$$\begin{array}{r} 7 \text{ R}159 \\ 300 \overline{) 2,259} \\ \underline{2,100} \\ 159 \end{array}$$

Place the quotient above the correct place value in the dividend.

Divide. Write remainders with R.

$$\begin{array}{r} 5 \text{ R}534 \\ 900 \overline{) 5,034} \\ \underline{4,500} \\ 534 \end{array}$$

$$\begin{array}{r} 6 \text{ R}293 \\ 400 \overline{) 2,693} \\ \underline{2,400} \\ 293 \end{array}$$

$$\begin{array}{r} 9 \text{ R}403 \\ 800 \overline{) 7,603} \\ \underline{7,200} \\ 403 \end{array}$$

8

Working in the LightUnit

Practice Set – Division with Three-Digit Divisors
(for students who did not pass yesterday’s pretest).

Board Work

→ Divide. Write remainders with R.

$$1. \text{ a. } \begin{array}{r} 8 \text{ R}227 \\ 600 \overline{) 5,027} \\ \underline{4,800} \\ 227 \end{array}$$

$$\text{ b. } \begin{array}{r} 5 \text{ R}159 \\ 200 \overline{) 1,159} \\ \underline{1,000} \\ 159 \end{array}$$

$$\text{ c. } \begin{array}{r} 7 \text{ R}82 \\ 500 \overline{) 3,582} \\ \underline{3,500} \\ 82 \end{array}$$

8

Lesson 3

Introduced in Math 604, Lessons 7 and 12; Math 605, Lesson 1

Estimating With Three-Digit Divisors

To divide by a three-digit divisor, estimate how many times the divisor will divide into the dividend.

Sometimes that estimate will be too large. After you multiply, you won't be able to subtract. Then change your estimate to a smaller number.

Sometimes the estimate will be too small. When you compare, the answer you get from subtracting is equal to or larger than the divisor. Then change your estimate to a larger number.

Sometimes the estimate will not need to be changed.

Divide. Write remainders with R.

$$\begin{array}{r} 3 \text{ R}60 \\ 784 \overline{)2,412} \\ \underline{2352} \\ 60 \end{array}$$

$$\begin{array}{r} 8 \\ 281 \overline{)2,248} \\ \underline{2248} \\ 0 \end{array}$$

$$\begin{array}{r} 6 \\ 328 \overline{)1,968} \\ \underline{1968} \\ 0 \end{array}$$

$$\begin{array}{r} 4 \text{ R}476 \\ 514 \overline{)2,532} \\ \underline{2056} \\ 476 \end{array}$$

$$\begin{array}{r} 8 \text{ R}8 \\ 451 \overline{)3,616} \\ \underline{3608} \\ 8 \end{array}$$

$$\begin{array}{r} 7 \\ 342 \overline{)2,394} \\ \underline{2394} \\ 0 \end{array}$$

Introduced in Math 606, Lesson 9

Larger Dividends With Three-Digit Divisors

When dividing larger problems with three-digit divisors, repeat the five steps of division until you have no more digits left to bring down.

$$\begin{array}{r} 136 \text{ R}323 \\ 894 \overline{)121,907} \\ \underline{894} \\ 3250 \\ \underline{2682} \\ 5687 \\ \underline{5364} \\ 323 \end{array}$$

Divide. Write remainders with R.

$$\begin{array}{r} 907 \text{ R}27 \\ 139 \overline{)126,100} \\ \underline{1251} \\ 100 \\ \underline{0} \\ 1000 \\ \underline{973} \\ 27 \end{array}$$

$$\begin{array}{r} 751 \text{ R}85 \\ 165 \overline{)124,000} \\ \underline{1155} \\ 850 \\ \underline{825} \\ 250 \\ \underline{165} \\ 85 \end{array}$$

Tips for Struggling Students

→ Make sure students are familiar with all the steps of long division. Insist that they correct all mistakes until they can work accurately. Teach them to keep their work neat and their columns straight so they do not lose their place in the division problem.

Board Work, continued

$$\begin{array}{r} 5 \text{ R}79 \\ 2. \text{ a. } 129 \overline{)724} \\ \underline{645} \\ 79 \end{array}$$

$$\begin{array}{r} 43 \text{ R}125 \\ \text{ b. } 389 \overline{)16,852} \\ \underline{1556} \\ 1292 \\ \underline{1167} \\ 125 \end{array}$$

$$\begin{array}{r} 128 \text{ R}218 \\ \text{ c. } 409 \overline{)52,570} \\ \underline{409} \\ 1167 \\ \underline{818} \\ 3490 \\ \underline{3272} \\ 218 \end{array}$$

Pretest – Geometry Applications (for all students).

Students must have **30** answers correct to pass this pretest.

Lesson 3

Pretest – Geometry Applications

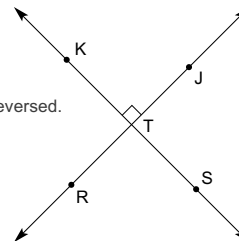
30
33



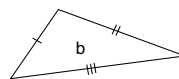
Ask your teacher to initial the circle before you begin this pretest.

Use the intersecting lines to do these exercises. (1 point each blank.) [3]

- The sum of all the angles in the figure is 360°.
- Name two straight angles from the figure. ∠KTS ∠RTJ
Order of letters may be reversed.



Classify by length of sides. Choose from *equilateral*, *isosceles*, or *scalene*. (1 point each.) [3]



- a. equilateral
- b. scalene
- c. isosceles

Classify by angles. (1 point.) [1]

- Write the letter of the triangle above which is also a right triangle. C



Write the letters from the quadrilaterals above to answer the questions. (1 point each blank.) [12]

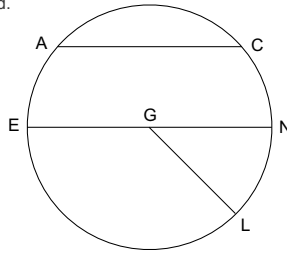
- Which two figures are trapezoids? A G
- Which figure is a square? C
- Which two figures are rectangles? C D
- Which five figures are parallelograms? B C D E F
- Which two figures are rhombuses? B C

Teacher Notes:

Lesson 3

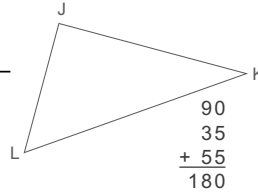
Do the exercises. (1 point each blank.) [6] Order of letters may be reversed.

10. Name the diameter of the circle. \overline{EN}
 11. Name three radii. \overline{GE} \overline{GL} \overline{GN}
 12. Name two chords. \overline{AC} \overline{EN}



Follow directions. Write the answers. (1 point each blank.) [4]

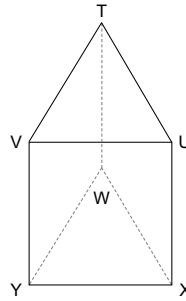
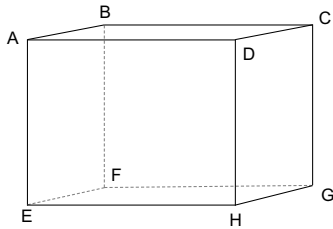
13. Measure the three angles of $\triangle JKL$.
 a. $\angle J$ 90° b. $\angle K$ 35° c. $\angle L$ 55°
 14. The sum of the measures of the three angles is 180° .



Tell whether each part names a *face*, an *edge*, or a *vertex* of one of the figures below.

(1 point each blank.) [4]

15. a. TW edge b. A vertex
 16. a. ABCD face b. TVU face



Ask your teacher to look over this pretest and mark the boxes on page 12.

I can have 33 answers correct.
 I must have 30 answers correct to pass.
 I have ___ correct.

Teacher Notes:

Lesson 4 pp. 12-16

Practice Set—
Geometry
Applications

Pretest—Division
With Decimals

Lesson Preparation

- Check the pretest from Lesson 3 and mark the appropriate box on page 12 of each LightUnit.
- Look over the practice set in Lesson 4, and prepare to teach the sections students had difficulty with on the pretest.
- Copy Extra Practice Sheets 3-7 as needed.
- Make sure each student has a protractor for measuring angles.

Lesson 4

Passed Lesson 3 pretest
Do the pretest on pages 15, 16.
Do *Extra Activity* (1, 2, 3, 4, 5, 6, 7, 8, 9).

Practice Set – Geometry Applications

Introduced in Math 602, Lesson 3; Math 603, Lesson 3

Angles and Sums of Intersecting Lines

When two lines intersect, the four resulting angles total 360° . A straight angle is 180° . It looks like a line.

Answer the questions. Order of letters may be reversed.

1. The sum of all the angles is 360° .
2. Name two straight angles. $\angle VXZ$ $\angle WXY$

Introduced in Math 602, Lesson 14; Math 606, Lesson 13

Classifying Triangles by Sides and by Angles

Triangles can be classified by length of sides. *Equilateral triangles* have three sides the same length. *Isosceles triangles* have two sides the same length. *Scalene triangles* have no sides the same length. Similar tick marks indicate sides of equal length.

Triangles can also be classified by angles. A triangle that has a 90-degree angle is a *right triangle*.

Classify by length of sides. Choose from equilateral, isosceles, or scalene.

3. a. scalene

3. b. isosceles

3. c. equilateral

Classify by angles.

4. Give the letter of the triangle above which is also a right triangle. a

12

Working in the LightUnit

Practice Set – Geometry Applications (for students who did not pass yesterday’s pretest).

Helpful Hints

- ➔ What makes a line a straight angle? It must be defined by three points, the middle point being the vertex of an angle measuring 180° .
- ➔ Point out to the students that the tickmarks on each side of the triangles shown on page 12 are used to show which sides have equal lengths. Identical tickmarks indicate that the sides marked that way have the same length. There is no need to use rulers to measure the sides of the triangles in order to classify them if tickmarks give them the necessary information.

Lesson 4

Introduced in Math 601, Lesson 9

Special Types of Quadrilaterals

Quadrilaterals are polygons with four sides. These are special types of quadrilaterals:

Trapezoids are quadrilaterals with one pair of parallel sides.

Parallelograms are quadrilaterals with two pairs of parallel sides. (Rectangles, squares, and rhombuses are also parallelograms.)

Rectangles are parallelograms with four right angles. (Squares are also rectangles.)

Rhombuses are parallelograms with four equal sides. (Squares are also rhombuses.)

Squares are parallelograms with four right angles (rectangles) and four equal sides (rhombuses).

Classify each quadrilateral in as many ways as possible: trapezoid, parallelogram, rhombus, rectangle, or square.



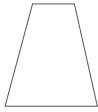
5. a. parallelogram



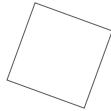
b. parallelogram
rhombus



c. parallelogram
rectangle



6. a. trapezoid



b. parallelogram
rhombus
rectangle
square



c. parallelogram
rectangle

Introduced in Math 605, Lesson 13

Circle Terms

Line segments whose endpoints touch a circle have various names.

A **radius** is a line segment from the edge of the circle to the center.

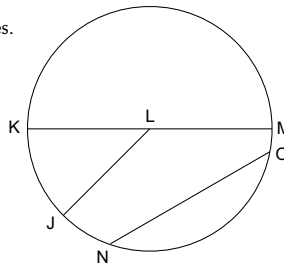
A **chord** is a segment with both ends on the circle. If a chord runs through the center of the circle, it is also called a **diameter**.

Do the exercises. Order of letters may be reversed.

7. Name the diameter of the circle. \overline{KM}

8. Name three radii. \overline{LM} \overline{LJ} \overline{LK}

9. Name two chords. \overline{NO} \overline{KM}



Tips for Struggling Students

→ The many overlapping classifications of quadrilaterals (four-sided polygons) may be confusing to some students. Make sure students understand that most quadrilaterals can be classified in several ways. Show them why this is true by drawing various quadrilaterals on the board and listing the reasons why every square is also a parallelogram, a rectangle, and a rhombus; why every rectangle is also a parallelogram; and why some parallelograms are also rhombuses.

→ Students may have similar difficulty recognizing that every diameter of every circle is also a chord, and that every diameter contains two radii.

→ Students who are new to CLE Sunrise Math this year may need some help with learning to use a protractor to measure the angles of a triangle.

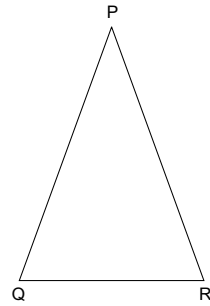
Teacher Notes:

Lesson 4

Introduced in Math 607, Lesson 13

Angles of a Triangle

You can measure the angles of a triangle with a protractor. For any triangle, the sum of its angles is 180 degrees.



Follow directions. Write the answers.

10. Measure the three angles of $\triangle PQR$.

- a. $\angle P$ 40° b. $\angle Q$ 70° c. $\angle R$ 70°

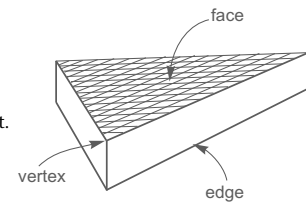
11. The sum of the measures of the three angles is 180° .

$$\begin{array}{r} 40 \\ 70 \\ + 70 \\ \hline 180 \end{array}$$

Introduced in Math 607, Lesson 11

Parts of a Solid

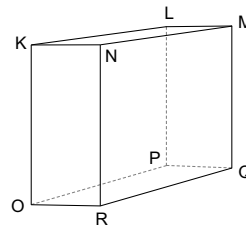
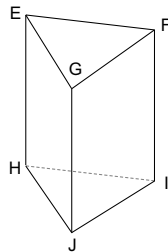
Each part of a solid has a name. A **face** is one full side. It has area like a polygon. An **edge** is the long corner where two faces meet. It has length like a line segment. A **vertex** of a solid is the corner where three or more faces meet. It is like the vertex of an angle.



Tell whether each part is a *face*, an *edge*, or a *vertex* of one of the figures below.

12. a. HI edge b. M vertex

13. a. KLPO face b. HIJ face



Teacher Notes:

Pretest – Division with Decimals



Ask your teacher to initial the circle before you begin this pretest.

Pretest – Division with Decimals (for all students).

Students must have **12** answers correct to pass this pretest.

Convert to decimals. Write repeating decimals with a bar. (1 point each.) [2]

1. a. $\frac{1}{6} = \underline{0.1\overline{6}}$

$$\begin{array}{r} 0.166 \\ 6 \overline{)1.000} \\ \underline{6} \\ 40 \\ \underline{36} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

b. $3\frac{4}{11} = \underline{3.3\overline{6}}$

$$\begin{array}{r} 0.3636 \\ 11 \overline{)4.0000} \\ \underline{33} \\ 70 \\ \underline{66} \\ 40 \\ \underline{33} \\ 70 \\ \underline{66} \\ 4 \end{array}$$

Convert to decimals rounded to the nearest hundredth. (1 point each.) [2]

2. a. $\frac{11}{12} \approx \underline{0.92}$

$$\begin{array}{r} 0.916 \approx 0.92 \\ 12 \overline{)11.000} \\ \underline{108} \\ 20 \\ \underline{12} \\ 80 \\ \underline{72} \\ 8 \end{array}$$

b. $3\frac{1}{7} \approx \underline{3.14}$

$$\begin{array}{r} 0.142 \approx 0.14 \\ 7 \overline{)1.000} \\ \underline{7} \\ 30 \\ \underline{28} \\ 20 \\ \underline{14} \\ 6 \end{array}$$

Convert to decimals rounded to the nearest thousandth. (1 point each.) [2]

3. a. $\frac{3}{16} \approx \underline{0.188}$

$$\begin{array}{r} 0.1875 \approx 0.188 \\ 16 \overline{)3.0000} \\ \underline{16} \\ 140 \\ \underline{128} \\ 120 \\ \underline{112} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

b. $2\frac{2}{3} \approx \underline{2.667}$

$$\begin{array}{r} 0.6666 \approx 0.667 \\ 3 \overline{)2.0000} \\ \underline{18} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

Teacher Notes:

Lesson 4

Divide. Write each quotient with a repeating decimal bar. (1 point each.) [2]

4. a. $15 \overline{)14.000}$ $0.933 \approx 0.9\bar{3}$

$$\begin{array}{r} 0.933 \approx 0.9\bar{3} \\ 15 \overline{)14.000} \\ \underline{135} \\ 50 \\ \underline{45} \\ 50 \\ \underline{45} \\ 5 \end{array}$$

b. $81 \overline{)123.000000}$ $1.518518 \approx 1.5\bar{18}$

$$\begin{array}{r} 1.518518 \approx 1.5\bar{18} \\ 81 \overline{)123.000000} \\ \underline{81} \\ 420 \\ \underline{405} \\ 150 \\ \underline{81} \\ 690 \\ \underline{648} \\ 420 \\ \underline{405} \\ 150 \\ \underline{81} \\ 690 \\ \underline{648} \\ 42 \end{array}$$

Divide. (1 point each.) [2]

Round to the nearest hundredth.

5. a. $14 \overline{)5.510}$ $0.393 \approx 0.39$

$$\begin{array}{r} 0.393 \approx 0.39 \\ 14 \overline{)5.510} \\ \underline{42} \\ 131 \\ \underline{126} \\ 50 \\ \underline{42} \\ 8 \end{array}$$

Round to the nearest thousandth.

b. $70 \overline{)0.8300}$ $0.0118 \approx 0.012$

$$\begin{array}{r} 0.0118 \approx 0.012 \\ 70 \overline{)0.8300} \\ \underline{70} \\ 130 \\ \underline{70} \\ 600 \\ \underline{560} \\ 40 \end{array}$$

Divide. (1 point each.) [3]

6. a. $0.8 \overline{)3.28}$ 4.1

$$\begin{array}{r} 4.1 \\ 0.8 \overline{)3.28} \\ \underline{32} \\ 8 \\ \underline{8} \\ 0 \end{array}$$

b. $0.124 \overline{)3.0132}$ 24.3

$$\begin{array}{r} 24.3 \\ 0.124 \overline{)3.0132} \\ \underline{248} \\ 533 \\ \underline{496} \\ 372 \\ \underline{372} \\ 0 \end{array}$$

c. $1.68 \overline{)20.664}$ 12.3

$$\begin{array}{r} 12.3 \\ 1.68 \overline{)20.664} \\ \underline{168} \\ 386 \\ \underline{336} \\ 504 \\ \underline{504} \\ 0 \end{array}$$

Teacher Notes:

Lessons 4, 5

○ Ask your teacher to look over this pretest and mark the boxes below.

I can have 13 answers correct.
I must have 12 answers correct to pass.
I have ____ correct.

Lesson 5

Passed Lesson 4 pretest
Do the pretest on pages 21, 22.
Do *Extra Activity* (1, 2, 3, 4, 5, 6, 7, 8, 9).

Did not pass Lesson 4 pretest
Do all of Lesson 5.

Practice Set – Division with Decimals

Introduced in Math 602, Lessons 6 and 13

Converting Fractions to Decimals and Repeating Decimals

To change a fraction to a decimal, divide the numerator by the denominator. For a mixed number, divide just the fraction part, then write the decimal answer beside the whole number.

$\frac{13}{16} = 0.8125$

$$\begin{array}{r} 0.8125 \\ 16 \overline{)13.0000} \\ \underline{128} \\ 20 \\ \underline{16} \\ 40 \\ \underline{32} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

Annex zeros to complete the division.

$\frac{2}{3} = 0.\overline{6}$

$$\begin{array}{r} 0.6\overline{6} \\ 3 \overline{)2.00} \\ \underline{18} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

If a quotient repeats the same digit, put a bar over the digit that repeats.

$2\frac{7}{12} = 2.5\overline{83}$

$$\begin{array}{r} 0.58\overline{33} \\ 12 \overline{)7.0000} \\ \underline{60} \\ 100 \\ \underline{96} \\ 40 \\ \underline{36} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

Repeating digit with a repeating bar.

$1\frac{5}{11} = 1.4\overline{545}$

$$\begin{array}{r} 0.4\overline{545} \\ 11 \overline{)5.000} \\ \underline{44} \\ 60 \\ \underline{55} \\ 50 \\ \underline{44} \\ 60 \\ \underline{55} \\ 5 \end{array}$$

If a quotient repeats several digits, put a bar over all the digits that repeat.

Lesson 5 pp. 17-22

Practice Set—Division With Decimals

Pretest—Using Formulas

Lesson Preparation

- Check the pretest from Lesson 4 and mark the appropriate box on page 17 of each LightUnit.
- Look over the practice set in Lesson 5, and prepare to teach the sections students had difficulty with on the pretest.
- Copy Extra Practice Sheets 8-10 as needed.

Working in the LightUnit

Practice Set – Division with Decimals (for students who did not pass yesterday’s pretest).

Board Work

→ Convert to decimals by dividing the numerator by the denominator.

1. a. $\frac{5}{8} = \underline{0.625}$

$$\begin{array}{r} 0.625 \\ 8 \overline{)5.000} \\ \underline{48} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

b. $\frac{15}{20} = \underline{0.75}$

$$\begin{array}{r} 0.75 \\ 20 \overline{)15.00} \\ \underline{140} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

c. $3\frac{4}{5} = \underline{3.8}$

$$\begin{array}{r} 0.8 \\ 5 \overline{)4.0} \\ \underline{40} \\ 0 \end{array}$$

Lesson 5

Convert to decimals. Write any repeating decimals with a bar.

1. a. $\frac{5}{6} = \underline{0.8\overline{3}}$

$$\begin{array}{r} 0.833 \\ 6 \overline{)5.000} \\ \underline{48} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

b. $8\frac{5}{12} = \underline{8.41\overline{6}}$

$$\begin{array}{r} 0.4166 \\ 12 \overline{)5.0000} \\ \underline{48} \\ 20 \\ \underline{12} \\ 80 \\ \underline{72} \\ 80 \\ \underline{72} \\ 8 \end{array}$$

c. $2\frac{5}{8} = \underline{2.625}$

$$\begin{array}{r} 0.625 \\ 8 \overline{)5.000} \\ \underline{48} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Divide. Write any repeating decimals with a bar.

2. a. $22 \overline{)20} = \underline{0.\overline{90}}$

$$\begin{array}{r} 0.9090 \\ 22 \overline{)20.0000} \\ \underline{198} \\ 200 \\ \underline{198} \\ 20 \end{array}$$

b. $27 \overline{)35} = \underline{1.29\overline{6}}$

$$\begin{array}{r} 1.296 \\ 27 \overline{)35.000000} \\ \underline{27} \\ 80 \\ \underline{54} \\ 260 \\ \underline{243} \\ 170 \\ \underline{162} \\ 80 \\ \underline{54} \\ 260 \\ \underline{243} \\ 170 \\ \underline{162} \\ 8 \end{array}$$

→ Divide, drawing a bar over the repeating decimal digits in the quotient.

2. a. $15 \overline{)2.000} = \underline{0.1\overline{3}}$

$$\begin{array}{r} 0.1\overline{3} \\ 15 \overline{)2.000} \\ \underline{15} \\ 50 \\ \underline{45} \\ 50 \end{array}$$

b. $24 \overline{)20.00} = \underline{0.8\overline{3}}$

$$\begin{array}{r} 0.8\overline{3} \\ 24 \overline{)20.00} \\ \underline{192} \\ 80 \\ \underline{72} \\ 8 \end{array}$$

c. $54 \overline{)12.00} = \underline{0.2\overline{2}}$

$$\begin{array}{r} 0.2\overline{2} \\ 54 \overline{)12.00} \\ \underline{108} \\ 120 \end{array}$$

Lesson 5

Introduced in Math 603, Lesson 8

Rounding Decimal Quotients

When a decimal repeats or divides to many decimal places, we may round the quotient. Divide until the quotient has one more digit than the place to which you are rounding. Then round as instructed. The symbol \approx means "approximately equal to."

$$\begin{array}{r} 0.666 \approx 0.67 \\ 9 \overline{)6.000} \\ \underline{54} \\ 60 \\ \underline{54} \\ 60 \end{array}$$

Rounded to the nearest hundredth.

Divide. Follow the directions for each problem.

Round to the nearest hundredth.

3. a. $\frac{24}{7} \approx 3.21$

$$\begin{array}{r} 3.208 \approx 3.21 \\ 7 \overline{)77.000} \\ \underline{72} \\ 50 \\ \underline{48} \\ 200 \\ \underline{192} \\ 8 \end{array}$$

Round to the nearest thousandth.

b. $\frac{81}{9} \approx 1.123$

$$\begin{array}{r} 1.1234 \approx 1.123 \\ 9 \overline{)11.0000} \\ \underline{81} \\ 100 \\ \underline{81} \\ 190 \\ \underline{162} \\ 280 \\ \underline{243} \\ 370 \\ \underline{324} \\ 46 \end{array}$$

Convert to decimals rounded to the nearest hundredth.

4. a. $\frac{15}{16} \approx 0.94$

$$\begin{array}{r} 0.937 \approx 0.94 \\ 16 \overline{)15.000} \\ \underline{144} \\ 60 \\ \underline{48} \\ 120 \\ \underline{112} \\ 8 \end{array}$$

b. $2\frac{7}{9} \approx 2.78$

$$\begin{array}{r} 0.777 \approx 0.78 \\ 9 \overline{)7.000} \\ \underline{63} \\ 70 \\ \underline{63} \\ 70 \\ \underline{63} \\ 7 \end{array}$$

c. $4\frac{3}{8} \approx 4.38$

$$\begin{array}{r} 0.375 \approx 0.38 \\ 8 \overline{)3.000} \\ \underline{24} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Board Work, continued

→ Divide. Round to the nearest tenth (or hundredth or thousandth).

3. a. $\frac{242307}{13} \approx 24.2$
 $\frac{3150000}{13} \approx 24.23$
 $\frac{26}{13} \approx 24.231$

$$\begin{array}{r} 242307 \approx 24.2 \\ 3150000 \approx 24.23 \\ 26 \\ \underline{55} \\ 52 \\ \underline{30} \\ 26 \\ \underline{40} \\ 39 \\ \underline{100} \\ 91 \\ \underline{9} \end{array}$$

b. $\frac{166382}{47} \approx 16.6$
 $\frac{7820000}{47} \approx 16.64$
 $\frac{47}{47} \approx 16.638$

$$\begin{array}{r} 166382 \approx 16.6 \\ 7820000 \approx 16.64 \\ 47 \\ \underline{312} \\ 282 \\ \underline{300} \\ 282 \\ \underline{180} \\ 141 \\ \underline{390} \\ 376 \\ \underline{140} \\ 94 \\ \underline{46} \end{array}$$

Lesson 5

Convert to decimals rounded to the nearest thousandth.

5. a. $\frac{2}{7} \approx \underline{0.286}$

$$\begin{array}{r} 0.2857 \approx 0.286 \\ 7 \overline{)2.0000} \\ \underline{14} \\ 60 \\ \underline{56} \\ 40 \\ \underline{35} \\ 50 \\ \underline{49} \\ 1 \end{array}$$

b. $\frac{7}{13} \approx \underline{0.538}$

$$\begin{array}{r} 0.5384 \approx 0.538 \\ 13 \overline{)7.0000} \\ \underline{65} \\ 50 \\ \underline{39} \\ 110 \\ \underline{104} \\ 60 \\ \underline{52} \\ 8 \end{array}$$

c. $\frac{9}{14} \approx \underline{0.643}$

$$\begin{array}{r} 0.6428 \approx 0.643 \\ 14 \overline{)9.0000} \\ \underline{84} \\ 60 \\ \underline{56} \\ 40 \\ \underline{28} \\ 120 \\ \underline{112} \\ 8 \end{array}$$

Introduced in Math 607, Lesson 1

Dividing a Decimal by a Decimal

To divide a decimal by a decimal, move the decimal point in the divisor just enough places to make it a whole number. Move the decimal point in the dividend the same number of places as you did in the divisor. Place the decimal point in the quotient, then divide as usual.

3. Place the new decimal point in the quotient.

1. Move the decimal point two places to the right.

$$0.25 \overline{)300.00}$$

2. Annex zeros and move the decimal point two places in the dividend.

Divide.

6. a. $0.9 \overline{)4.14}$

$$\begin{array}{r} 4.6 \\ 9 \overline{)4.14} \\ \underline{36} \\ 54 \\ \underline{54} \\ 0 \end{array}$$

b. $0.107 \overline{)2.5145}$

$$\begin{array}{r} 23.5 \\ 107 \overline{)2.5145} \\ \underline{214} \\ 374 \\ \underline{321} \\ 535 \\ \underline{535} \\ 0 \end{array}$$

c. $2.99 \overline{)18.538}$

$$\begin{array}{r} 6.2 \\ 299 \overline{)18.538} \\ \underline{1794} \\ 598 \\ \underline{598} \\ 0 \end{array}$$

→ Move the decimal points so that the divisor becomes a whole number. Then divide.

4. a. $2.8 \overline{)24.92}$

$$\begin{array}{r} 8.9 \\ 28 \overline{)24.92} \\ \underline{224} \\ 252 \\ \underline{252} \\ 0 \end{array}$$

b. $5.17 \overline{)84.788}$

$$\begin{array}{r} 16.4 \\ 517 \overline{)84.788} \\ \underline{517} \\ 3308 \\ \underline{3102} \\ 2068 \\ \underline{2068} \\ 0 \end{array}$$

c. $3.4 \overline{)49.30}$

$$\begin{array}{r} 14.5 \\ 34 \overline{)49.30} \\ \underline{34} \\ 153 \\ \underline{136} \\ 170 \\ \underline{170} \\ 0 \end{array}$$

Pretest – Using Formulas



Ask your teacher to initial the circle before you begin this pretest.

Use the formula to find the circumference of the circle. Use $\frac{22}{7}$ for π . (1 point formula, 1 point solution.) [2]

1. $\underline{16\frac{1}{2} \text{ in}}$

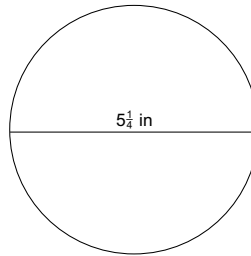
$C = \pi d$

$C = \frac{22}{7} \times 5\frac{1}{4}$

$C = \frac{22}{7} \times \frac{21}{4} = \frac{33}{2}$

$C = 16\frac{1}{2}$

$$\begin{array}{r} 16\frac{1}{2} \\ 2 \overline{) 33} \\ \underline{2} \\ 13 \\ \underline{12} \\ 1 \end{array}$$



Use the formula to find the perimeters. (1 point each formula, 1 point each solution.) [4]



2. a. $\underline{24 \text{ m}}$

$P = 2l + 2w$

$P = (2 \times 8) + (2 \times 4)$

$P = 16 + 8$

$P = 24$



b. $\underline{60 \text{ ft}}$

$P = 2l + 2w$

$P = (2 \times 22) + (2 \times 8)$

$P = 44 + 16$

$P = 60$

Use the formula to find the area of the circle shown. Use 3.14 for π . (1 point formula, 1 point solution.) [2]

3. $\underline{254.34 \text{ cm}^2}$

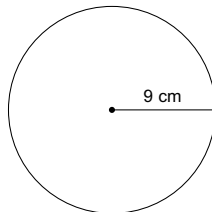
$A = \pi r^2$

$A = 3.14(9 \times 9)$

$A = 3.14(81)$

$A = 254.34$

$$\begin{array}{r} 3.14 \\ \times 81 \\ \hline 314 \\ 25120 \\ \hline 254.34 \end{array}$$



Tips for Struggling Students

➔ By this level, students should be proficient at long division. However, converting fractions to decimals, rounding quotients correctly, and dividing a decimal by another decimal may pose complications for a student who has difficulty concentrating on all the details. The key to helping such students learn is practice, practice, practice for them; and patience, patience, patience from you.

Insist that students correct every incorrect long division exercise as they work through Math 700, and be prepared to take time to help them discover their errors when they are frustrated about a problem that just won't come out right. Your patience in helping such a student unravel the snarls will help him enjoy the rewards of accuracy and achievement.

Pretest – Using Formulas (for all students).

Students must have 9 answers correct to pass this pretest.