Module on Fractions for Grades 2-3

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Adapted from:

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Math Module Outline

Grade level: 2-3

Topic: Number and Operations/Fractions

Objectives: Students will be able to:

1. Equally divide concrete objects and express the divisions as fractions.
2. Understand the relationship between a unit fraction and a proper fraction.
3. Compare and express the relationship between proper fractions with the same denominator.
4. Compare and express the relationship between unit fractions by playing with concrete objects.
5. Understand the sequence of proper fractions with the same denominator in a number line.
6. Add and subtract proper fractions with the same denominator by equally dividing concrete objects.
7. Solve a word problem involving the addition and subtraction of fractions.

Standards Addressed

Common Core Standards

- Grade 2: Reason with shapes and their attributes
- Grade 3: Develop understanding of fractions as numbers

Missouri Grade Level Expectations

- Number and Operations 1B2: recognize unit fractions of a shape (DOK 1)
- Number and Operations 1C2: <u>compose</u> or <u>decompose</u> numbers by using a variety of strategies, such as using known facts, tens place value or <u>landmark numbers</u> to solve problems (DOK 2)
- Number and Operations 1B3: represents halves, thirds and fourths (DOK 1)
- Number and Operations 1C3: recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u> including expanded notation (DOK 2)

Missouri Content and Process Standards:

MA1 1.6

MA 1: addition, subtraction, multiplication and division; other number sense, including numeration and estimation; and the application of these operations and concepts in the workplace and other situations

Goal 1.6: discover and evaluate patterns and relationships in information, ideas and structures

MA5 1.10

MA 5: mathematical systems (including real numbers, whole numbers, integers, fractions), geometry, and number theory (including primes, factors, multiples)

Goal 1.10: apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers

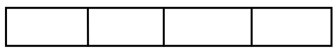
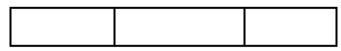
Unit Sequence

Pretest	
Lesson 1	Identifying Fractional Parts of a Whole
Lesson 2	Dividing a Shape into Equal Parts
Lesson 3	Naming and Writing Fractional Parts of a Whole
Lesson 4	Finding Half of a Set of Objects and Expressing Equal Parts as a Fraction
Lesson 5	Naming Fractions of a Group
Lesson 6	Identifying a Dozen and a Half Dozen; Writing a Fraction to Show Part of a Set
Lesson 7	Writing a Part of a Set as a Fraction
Lesson 8	Comparing and Ordering Fractions with Uncommon Denominators
Lesson 9	Finding Fractions on a Number Line
Lesson 10	Adding and Subtracting Fractions with a Like Denominator
Posttest	

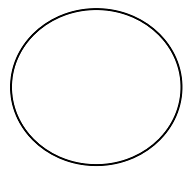
Name ____ Date __________________

Pre Test

1. Shade the picture showing the fraction.

3/4  1/3 

2. Divide each shape into thirds. Shade two thirds of each shape.

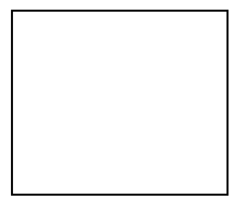
 

3. Divide the square into 8 equal parts.

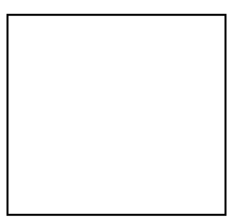
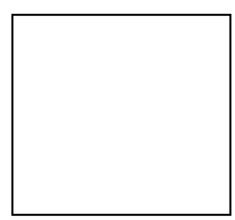
-Shade three eighths.

-Write a fraction to show what

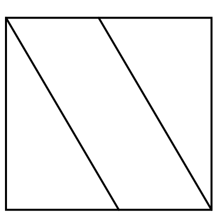
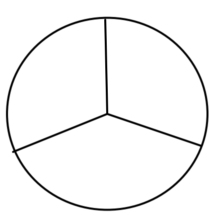
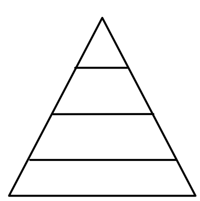
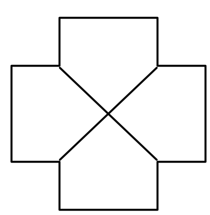
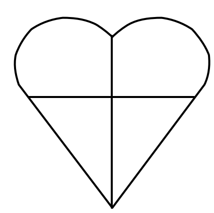
fractional part is not shaded. ______________



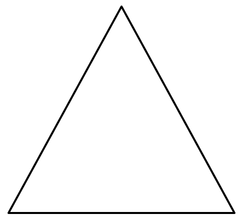
4. Show two different ways to divide a square in half.

5. Circle the figures that are divided into equal parts.

6. Divide the following shapes into the number of equal parts given.



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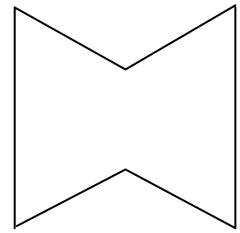

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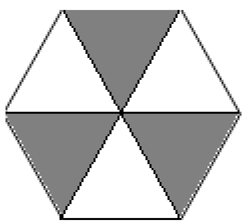
7. Write the fractions to show what part is shaded.



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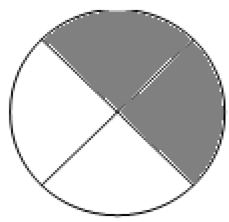


______

8. There are 8 baseball cards. Sally wants to have 1/4 of 8. How many baseball cards would she get? ________________________________

9. Which fraction equals 1/2?

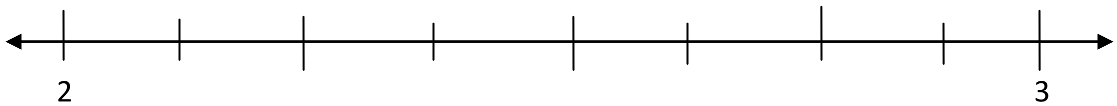
A. 3/4

B. 2/6

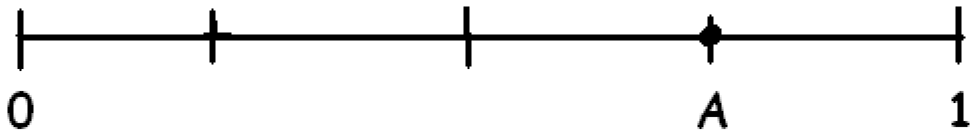
C. 1/4

D. 2/4

10. Using mixed numbers, label the number line below.



11. What fraction is shown at A on the number line?



A. 1/4 B. 4/4

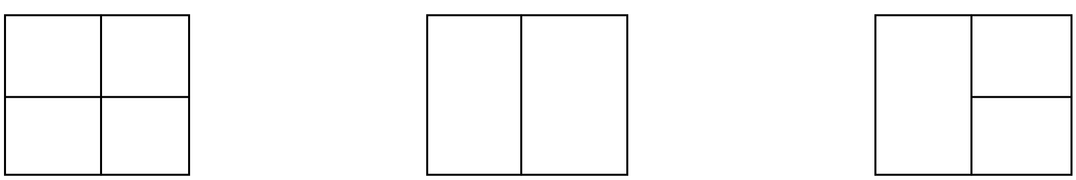
C. 3/4 D. 1/2

12. Calculate the following. Show work.

1/5 + 3/5 = 4/9 + 4/9 =

3/4 – 2/4 = 8/10 – 5/10 =

13. Label each piece of the squares. Write a fraction number sentence for each square.



____________________ = 1 ____________________ = 1 ____________________ = 1

14. The distance around the school track is ¼ mile. How many times around the track does Sam need to run in order to run one mile? _________________________

15. You have 9 crackers. One third of the crackers have peanut butter on them. Draw a picture and write a fraction to show how many crackers do not have peanut butter on them.

____

16. List in order from least to greatest.

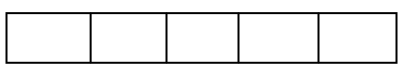
3/15 . 7/15 , 1/15 , 13/15 , 8/15 (____ , ____ , ____ , ____ , ____)

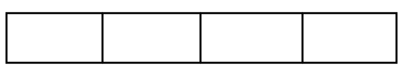
1/3 , 1/5 , 1/4 , 1/2 , 1/6 (____ , ____ , ____ , ____ , ____)

17. Insert < , > , or = between the two fractions:

3/7 5/7 7/18 11/18

18. Shade the picture showing the fraction.

1/5 

1/4 

Which is greater, 1/5 or 1/4? ____

How do you know? ____

____

19. Calculate the following. Show work.

$2\frac{1}{3} + 1\frac{3}{4} =$ $5/8 \times 3/5 =$

20. If each person at a party will eat 3/8 of a pound of M&Ms, and there will be 5 people at the party. How many pounds of M&Ms will be needed? Between what two whole numbers does your answer lie? ___________________

21. Write three different fractions that are equivalent to 1/2.

____

22. Calculate the following.

$2\frac{1}{2} \times 1\frac{2}{3} =$

23. How much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally?

____

24. How many 1/3-cup servings are in 2 cups of raisins?

25. Carol cut 2 ½ inches off her hair three times last year. If she had not cut her hair, how much longer would it have been at the end of the year? ________________

26. Simplify the following fractions.

22/3 _____ 8/4 _____ 10/4 _____

27. Calculate the following. Show your work and simplify fraction

$3/4 \div 2/3 =$ $7/8 + 1\,3/16 - 1/2 =$

28. What number is 4/7 of 210? _________

29. Evaluate xy – yt if x = 12, y = 1/3, and t = 6.

30. Find the reciprocal.

5/6 _____ 1/8 _____ 2 _____ 5 1/3 _____

31. Complete the chart below.

FRACTION	DECIMAL	PERCENT
(a.)	0.6	(b.)
(c.)	(d.)	5%

Pre/Post Test Item Analysis

Item Number	Objective	Grade Level
1	Read and represent a fractional part of a whole	2
2	Model fractional parts of a whole	2
3	Model and identify fractional parts of a whole	2
4	Identify and model one half of a whole in multiple ways	2
5	Recognize equal parts of a shape	2
6	Model equal parts of a shape	2
7	Identify a fractional part of a whole	2
8	Find a fractional part of a whole	2
9	Find equivalent fractions	3
10	Name fractions and mixed numbers on a number line	3
11	Locate fractions on a number line	3
12	Add and subtract fractions	3
13	Write fraction number sentences that equal one	3
14	Find and solve fraction number sentences that equal one	3
15	Model and find a fractional part of a set	3
16	Order fractions	3
17	Compare fractions	4
18	Compare fractions	4
19	Add mixed numbers and multiply fractions	4
20	Multiply fractions by whole numbers	4
21	Identify equivalent fractions	5
22	Multiply mixed numbers	5
23	Multiply fractions	5
24	Divide by fractions	5
25	Multiply mixed numbers	5
26	Simplify improper fractions	5
27	Divide and use mixed operations (addition and subtraction)	6
28	Divide fractions	6
29	Mixed operations with fractions	6
30	Find reciprocals	6
31	Identify equivalent fractions, decimals and percents	6

Pre/Post Test Student Analysis Form

	Items																			
Students	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

	Items										
Students	21	22	23	24	25	26	27	28	29	30	31

Lesson 1: **Identifying Fractional Parts of a Whole**

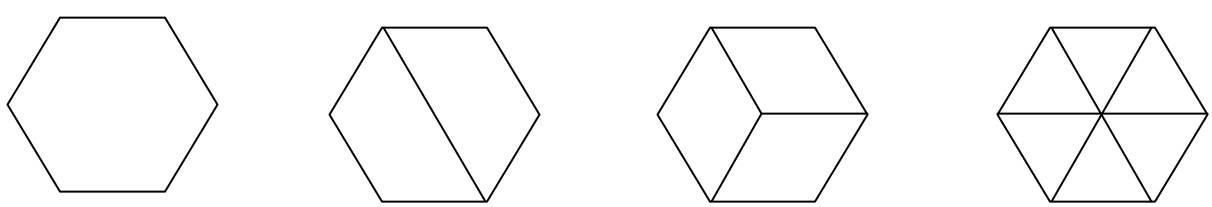
Objective: Each student will use pattern blocks to show a shape can be divided into halves, thirds, and sixths.

Lesson Resources:
Lesson 19 from Saxon Math 2, a set of pattern blocks for each student (including at least 1 yellow hexagon, 2 red trapezoids, 3 blue parallelograms, and 6 green triangles per student)

Missouri Grade Level Expectation:
Math Numbers and Operations 1B2: recognizes unit fractions of a shape

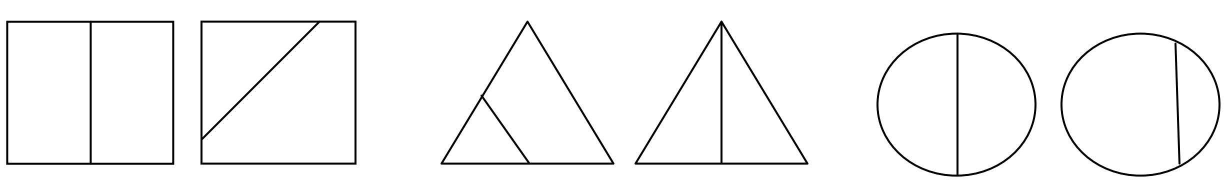
Demonstration:
Have students use their pattern block pieces to cover the hexagon. Start with the trapezoids and ask how many pieces are needed to completely cover the hexagon (2). Ask students how they know two trapezoids are the same as one hexagon (they are the same shape and size). Explain this means one trapezoid is equal to one half of the hexagon. Repeat using the parallelograms to demonstrate thirds and the triangles to demonstrate sixths.

Guided Practice:
Have students trace the hexagon four times on a sheet of paper. Then show them how to trace the other pattern blocks inside each hexagon so they can show it divided into smaller parts.



Explain to students that the smaller pieces are called fractions because they represent a small part of the whole object, in this case smaller pieces that can make up the whole hexagon. In order to be considered a fraction, the pieces must be equal sizes.

Draw the following shapes and ask students to identify which are divided into equal parts, and are therefore fractional parts of a whole.



Independent Practice:
Ask students to hold up the pattern block that is one third of the hexagon. Then ask them to hold up the one that is one sixth of the hexagon, followed by one half.

Notes for Teacher:
Make sure students understand that in order to be divided into fractions, the parts must be equal. They do not have to have mastered the names of fractions in order to understand the lessons following.

Lesson 2: **Dividing a Shape into Equal Parts**

Objective: Each student will

- Divide a square in half two different ways.
- Identify fractional parts of a whole including halves, fourths, and eighths. 0

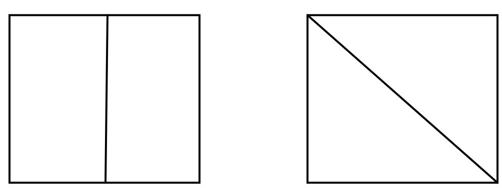
Lesson Resources:
Lessons 24 and 39 from Saxon Math 2, paper squares at least 4 inches and 2 per student, an apple to use for demonstration, and scrap paper for students to write on.

Missouri Grade Level Expectation:
Math Numbers and Operations 1B2: recognizes unit fractions of a shape

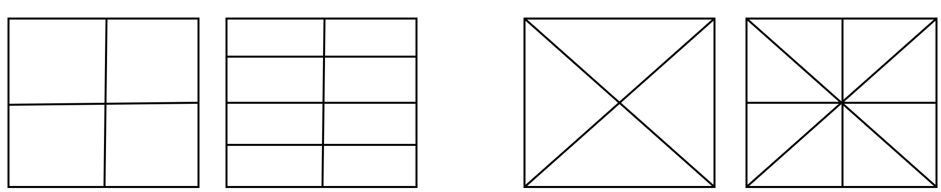
Real Life Problem:
Let's imagine you are going to share this apple with a friend. How might you do that so you both get the same amount? Allow students to discuss.

Demonstration:
Show students how to cut the apple in half so both pieces are equal.

Guided Practice:
Give each student a paper square and ask them to explain how they might divide it in half. Then allow them to fold and cut the paper into halves. Give them another sheet and ask them to do it in another way. Explain that while the end result is different (either 2 rectangles or 2 triangles) each piece is still one half of the square.



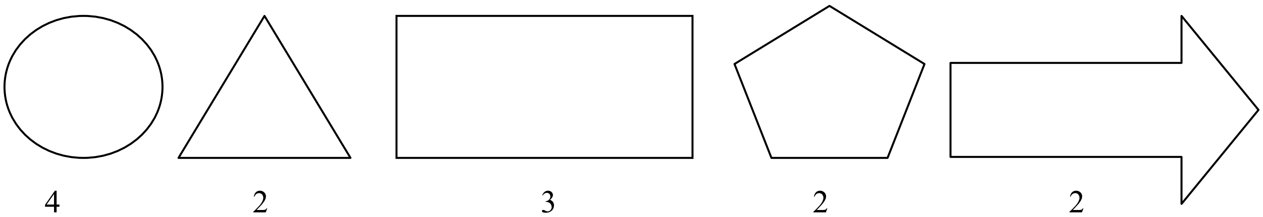
Then have students divide the pieces into halves to make fourths. Repeat to make eighths.



Reiterate to students that the pieces are considered to be fractions because they are equal parts of the whole square.

Independent Practice:

Ask students to divide the following shapes into the number of equal parts given.



4 2 3 2 2

Notes for Teacher: Be aware your students may confuse dividing shapes into halves with creating lines of symmetry. In the square example at the beginning of the lesson, the vertical cut that divided the square into 2 rectangles is also a line of symmetry. The oblique cut that divides the square into 2 triangles is also a symmetrical line. However, the oblique cut that divides a rectangle other than a square is not a symmetrical line. Be ready to address this misconception when teaching about symmetry.

Lesson 3: **Naming and Writing Fractional Parts of a Whole**

Objective: Each student will be able to name and write fractions.

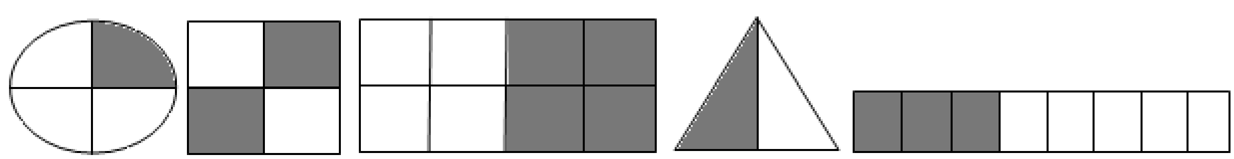
Lesson Resources:
Lesson 41 from Saxon Math 2, scrap paper for students to write on.

Missouri Grade Level Expectation:
Math Numbers and Operations 1B2: recognizes unit fractions of a shape

Real Life Problem:
Show students a recipe card that uses fractions. Ask them how they would read those numbers to know how much of an ingredient to put in the recipe.

Demonstration:
Draw 3 circles on the board, divide them into halves, fourths, and eighths. Point to the circle divided into halves and ask students how many equal pieces they see (2). Explain that each piece is 1 out of 2 pieces and is called one-half. Repeat with fourths and eighths.

Guided Practice:
Give students the following shapes and ask them to color the listed number of pieces. Examine each shape and discuss how many pieces are colored and what the name of that fraction would be. Then have students write the name of the fraction in words (one half) and numbers (1/2) underneath each shape.



Independent Practice: Ask students to read the following fractions aloud:

$\frac{1}{3}$ $\frac{1}{5}$ $\frac{1}{7}$ $\frac{5}{6}$ $\frac{5}{8}$ $\frac{7}{9}$ $\frac{3}{4}$

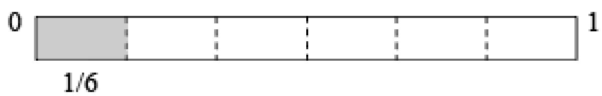
Lesson 4: Finding Half of a Set of Objects and Expressing Equal Parts as a Fraction

Objective: Each student will find half of a set of objects and express equal parts as a fraction. (1 over total number of parts.)

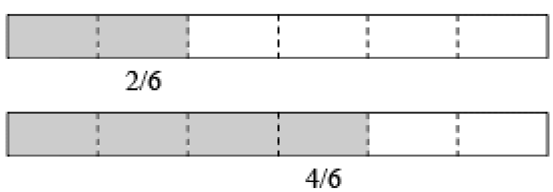
Lesson Resources:
Colored tiles, candies, pennies

Missouri Grade Level Expectation:
Math Numbers and Operations 1B2: recognizes unit fractions of a shape

Review: Use bars to help students study the relationships between proper and unit fractions. The students need to figure out how to express the shaded area over how many is in the whole.



The students need to express themselves in written and oral form. Get the students to express the above bar as "1 over 6 or 1/6".



The students can do overlapping activities to help them understand how many sixths there are in 2/6 and 4/6. You may ask the students questions like:

- What is 2 times 1/6?
- How many 1/6's does it take to make 3/6?

Real Life Problem:
"I am going to share these candies with (child's name) so that we both have an equal amount. I will keep half of the candies and (child's name) will keep half of the candies. Who can demonstrate how to divide this group of 8 candies in half?" Are the groups equal? How do you know? How many will I have? How many will they have? Write "half of 8 = 4". How can we check? Write as a fraction.

***Students need to see many demonstrations. Use the written form, but include examples like circles divided into 8 equal parts or the number line to help students generalize.

Guided Practice:
Have the students use their manipulative to find the following.
Find: half of 10=   half of 40=   half of 24=   half of 50=

Next have the students draw a box of candy with 8 pieces. Next have them divide it in half. Then write *half of ____=____ below the picture. Then write as a fraction.* Do the same with 12.

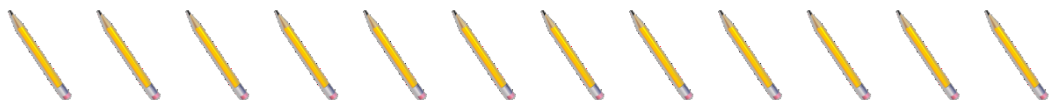
Independent Practice:
Worksheet 4-1

Notes for Teacher: Lesson length approximately 30 minutes. Have the students move around to switch or trade counting items with each other.

Worksheet 4-1

Name____

1. How many pencils are below? ______



Circle half the pencils.

How many pencils did you circle? ______________

Write the fraction. ________

2. If 12 stars are divided into 2 groups, then each group has ________stars.

½ of 12 is _______.

Prove your answer by using a diagram or number line.

3. How many are in a dozen? __________

4. How many in half a dozen? _________

5. Write “two thirds as a fraction”.__________

6. What is a fraction? ___________________________________

Lesson 5: Naming Fractions of a Group

Objective: Each student will:

- Name a fraction of a group using symbols and words.
- Use the words “numerator” and “denominator” to describe fractions of a group.
- Name a fraction of a group based on information given in a story problem.

Lesson Resources:
Lesson 44 from Saxon Intermediate 3, counters or other manipulatives, scratch paper or dry erase slates

Missouri Grade Level Expectation:
Numbers & Operations 1B3: represents commonly used fractions: halves, thirds and fourths

Real Life Problem:
If you want to describe three of eight puppies as having white ears, what will you say?
Allow individual students time to think about the problem. After think-time, have students pair up to share answers. Students will share their answers with the rest of the class.

Demonstration:
Have students make up their own fractions describing parts of a set of items, for example: what fraction of the students at your table are girls, what fraction of the pencils in your desk need to be sharpened? Students should take turns describing their examples aloud. Using the following methods--picture, manipulatives, and number line--have students (or teacher) demonstrate how to solve each problem.

Guided Practice:
Allow students to work independently or with a partner to answer the following questions with words, pictures, manipulatives, and a number line.

1. What fraction of the names of the days of the week begins with the letter *S*?
2. Brad has 3 red shirts, 4 blue shirts, and 1 green shirt. What fraction of his shirts is red?

Independent Practice:
Ask students to respond to the following:

1. What fraction of the letters in your first name are vowels? Use words and digits to name the fraction.
2. When using fractions to describe part of a set, what does the denominator show?
3. What does the numerator show?

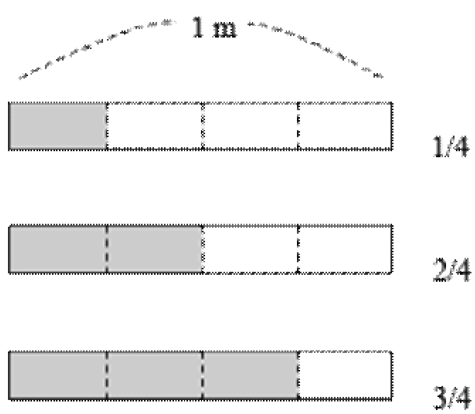
Lesson 6: Identify a Dozen and a Half Dozen
Writing a Fraction to Show a Part of a Set

Objective: Each student will
- identify a dozen and a half dozen
- write a fraction to show a part of a set

Lesson Resources:
Lesson 26 from Saxon Math 3, egg cartons for each group of 2-3 students, manipulatives (such as counters), and scrap paper

Missouri Grade Level Expectation:
Numbers & Operations 1B3: represents commonly used fractions: halves, thirds and fourths

Review:
Make sure the students understand that fractions are equally divided. Make sure you give examples that are not divided equally.



Real Life Problem:
Mrs. Moore bought a dozen donuts to share with her class. She had 6 students and each had one donut. Write in fraction form how many she has left. (3-5 minutes)

Demonstration:
Hold up an egg carton. Have students guess how many eggs the carton holds. Have them pretend that there is an egg in each space and count. Discuss that 12 of something is a 'dozen'. Demonstrate how to write 12/12 or a whole (1). How many eggs do you think there will be in each half dozen? (After dividing the carton in half, there are 6 out of the 12 eggs). Demonstrate how to write 'half dozen' or 6/12. Point out that 6/12 or ½ of the carton is the same. May also show that 6 is half of 12 on the number line.

Guided Practice:
Students should demonstrate what 5/12, 11/12 etc. is with their cartons and write the fraction. Have students list or say what else comes in dozens. Make sure that the students demonstrate their understanding using other models.

Independent Practice:
Worksheet 6-1

Worksheet 6-1

Name____

Sometimes fractions are used to describe parts of a set or group of items.

1) Draw a dozen donuts. Half of the donuts are chocolate. Color half a dozen brown. What fractional part is brown?

Answer: ____________________

2. Draw and shade a circle to represent the fraction 6/6.

3. John has 10 coins in his pocket. Of those coins, 5 are quarters. What fraction of his coins are quarters?

4. What fraction of the names of the days of the week begins with the letter T? ____________________

Lesson 7: Writing Part of a Set as a Fraction

Objective: Each student will learn how to write a part of a set as a fraction.

Lesson Resources:
Lesson 61 from Saxon Math 3, colored beads or color chips (5-12 per child)

Missouri Grade Level Expectation:
Numbers & Operations 1B3: represents commonly used fractions: halves, thirds and fourths

Guided Practice:
The teacher shows the students the chips or beads with different colors (6 total chips with 4 red, 2 yellow). We will pretend that these chips are beads on a necklace. We will arrange them like this. Show the colors on the board. Say, "We can write what part of the whole necklace each bead is by using a fraction." How many beads do I have (5). What fractional part is each bead? 1/5. Write fraction below each bead on the bead. What fractional part is red? 3/5. What fractional part is yellow? 2/5. Together we have five fifths or one whole. The students should see the part in relationship to the whole. (Students also need to know which number goes over which number.)

Give each student a small handful of red and yellow beads/chips (5-12). Have students arrange their beads on their desk like a necklace. Have them draw a picture and write what fractional part each bead is. Have them write what fractional part is red. Then write what fractional part is yellow. Last have them write what fractional part is the whole.

Write the following chart on the board:

	Red	Yellow	Total
1.	**5/7**	**2/7**	**7/7**
2.			
3.			

Demonstrate with 7 chips. If I have 7 chips and 5 are red, what fractional part is red? 5/7. If I have 7 chips and 2 are yellow, what fractional part is yellow? 2/7. What is your "total fractional parts?" (Point out to the students that the denominator does not change. The whole or the denominator is how many you have of something. The numerator shows how many you have of the seven.)

Independent practice:
Have the students count their own beads and record. Now gently shake the chips and record the fractional parts a few more times. Ask what the question, "What did you notice?"

Rotate groups and have them record the group number and the fractions for each. Check to see if they are recording the numerator and denominator correctly. They also need to understand that the red and yellow fraction is part of the whole.

Lesson 8: Comparing and Ordering Fractions with Uncommon Denominators

Objective:
Each student will be able to compare fractions with uncommon denominators noting which is greater than the other.

Lesson Resources:
Lessons 73, 74, 93, and 94 from Saxon Math 3, equal length strips of paper – 8 per student in 8 different colors, scissors, pencils, Worksheet 8-1, scrap paper

Missouri Grade Level Expectation:
Numbers and Operations 1.B3: represent halves, thirds, and fourths

Real Life Problem:

1. Show students two cups of juice: one containing ¾ cup of juice and the other with 2/3 cup of juice. Ask the students to compare the two amounts of juice.
2. Show students a diagram of a cake. Shade in ¼ of the cake to represent the part that was eaten by the teacher and shade 1/3 to represent the part that was eaten by a student. Ask students to compare the two amounts that were eaten.

Demonstration:
Begin by reviewing that a fraction is a part of a whole.

Get students to think about how to compare ½, 1/3, ¼, 1/5, 1/6, 1/7 and 1/8. Provide eight different colored strips of paper, equal in length, to each student. Have them each hold up one whole strip (of the same color) and explain that this strip represents one whole and have them place it at the top of their work station. Pick up the next (same color) strip and have them fold it in 2 pieces, cut on the fold and label each piece ½, explaining that ½ is 1 of 2 parts of a whole that has been equally divided into 2 parts. Lay the ½ strips under the whole strip. Pick up a new strip and have them fold it in 3 equal parts, cut at the folds and label each piece 1/3, explaining that 1/3 is 1 of 3 parts of a whole that has been equally divided into 3 parts. Continue on in that manner using ¼, 1/5, 1/6, 1/7 and 1/8. When completed and all the strips are lined up on the desk, have students look at the pieces and compare the fractions intuitively. Have them take one piece from each whole and put them in order from the biggest piece to the smallest piece. Ask if they see any relation between the sizes of the piece to the written fraction. After some discussion, point out that the smaller the denominator, the larger the fractional piece and the larger the denominator, the smaller the fractional piece.

Ask them:

*Which is bigger, ½ or 1/3?

*Which is bigger, ¼ or 1/3?

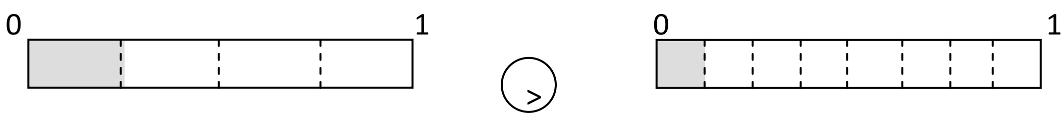
* Which is bigger, ¼ or 1/5?

*Which is bigger, 1/8 or 1/3?

*Which is bigger, 1/5 or 1/6?

Guided Practice:
Worksheet 8-1. Students will shade figures of equal length to match given fractions and compare the sizes of the colored areas and fractions using an inequality sign.

EXAMPLE:
Shade ¼ and 1/8.



Help students understand that fractions represent one part of a whole. The more the whole is divided (equally), the smaller each section will be.

Write the following groups of fractions on the board and have students order them in ascending order on a sheet of scrap paper. After a few warm up problems, include denominators that were not used earlier in the lesson to prevent memorization or reliance on the paper strips.

1. 1/6, ½, 1/7, 1/3
2. 1/8, ¼, 1/9, 1/3
3. 1/7, 1/9, 1/8, 1/5
4. 1/3, ¼, 1/6, 1/8
5. ½, 1/10, 1/7, 1/9
6. 1/1, 1/12, 1/5, 1/3

Exit survey:
Present the question: Which fraction is larger, ½ or 1/5? Have students write and EXPLAIN their answer on a sheet of paper.

Worksheet 8-1

Name ____ Date ______________

Shade the bar to represent the fraction shown and use an inequality sign (>, =, <) to compare the shaded figures.

Shade 1/3 and ½.

0 1 0 1

Shade 1/5 and 1/7

0 1 0 1

Shade ¼ and 1/8

0 1 0 1

Shade ½ and 1/7

0 1 0 1

Shade 1/3 and 1/6

0 1 0 1

Lesson 9: Finding Fractions on a Number Line

Objective: Each student will:

- Locate and name fractions including halves and fourths on a number line.
- Analyze a number line to find the numerator and denominator of the fraction displayed.
- Copy and draw points on a number line to represent fractions and mixed numbers.

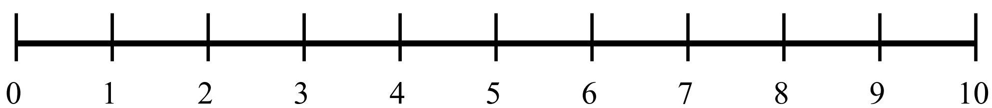
Lesson Resources:
Lesson 48 from Saxon Intermediate 3, scratch paper or dry erase slates, Worksheet 9-1

Missouri Grade Level Expectation:
Numbers & Operations 1B3: represents commonly used fractions: halves, thirds and fourths

Real Life Problem:
Discuss real-world situations where we might see fractions on a number line. Examples are given below.

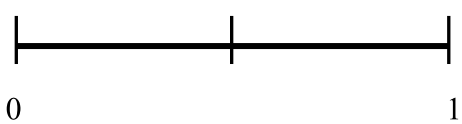
- We measure 1 ½ cups of sugar in a 2 cup measuring cup.
- We use a ruler to measure a box that is 5 ¼ inches long.

Demonstration:
Using the number line below, review with students what they have already learned about placing natural numbers on number lines.



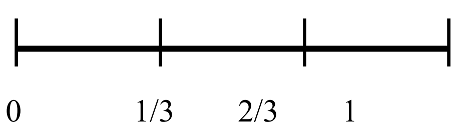
Ask students whether they think a fraction can be placed on a number line, too.

Provide the following line segment. Point out that it starts with 0 and ends with 1 and has been divided into two equal parts.



Review with the students how to represent 1 of 2 equal parts as a fraction (1/2). Then help them recognize that, since 1 of 2 equally divided parts is ½, the division on the line corresponds to ½.

Now, divide the following segment into 3 parts.

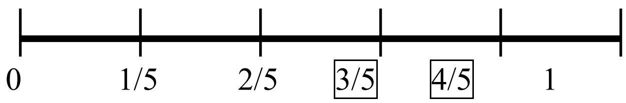


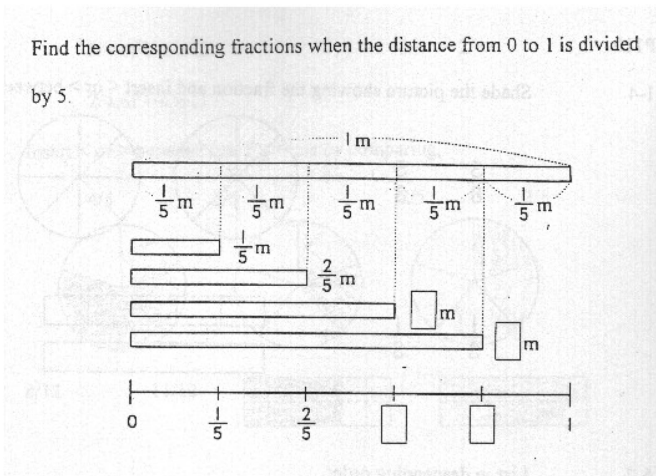
Again, review with students how to represent 1 or 2 of 3 equal parts as fractions (1/3, 2/3). Then get them to realize that, in the figure, the first of the 3 equal divisions between 0 and 1 is 1/3, and the second is 2/3.

Guided Practice:

Give students the opportunity to mark 0, ½, and 1 on number lines they create. Check students' lines and help them correct any mistakes.

Given a line segment divided into 5 equal sections between 0 and 1, as shown below, have students write the fractions corresponding to each division.





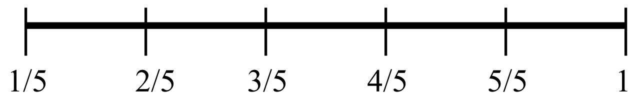
Independent Practice:

Remind them to use the following steps:

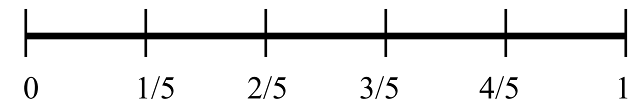
- Check the positions of 0 and 1 on the line. Remember that the starting point is always 0.
- Find out how many divisions there are between 0 and 1.
- Check to be sure the divisions are equal (that is, the line has been equally divided).
- Figure out the value of one division and express this as a unit fraction.
- For each segment, figure out how many of the unit fraction are included, and express this as a fraction.
- Match each fraction to its corresponding division on the number line.

Students practice using Worksheet 9-1.

Notes for Teacher:
Watch for the following error in placing fractions on a number line:



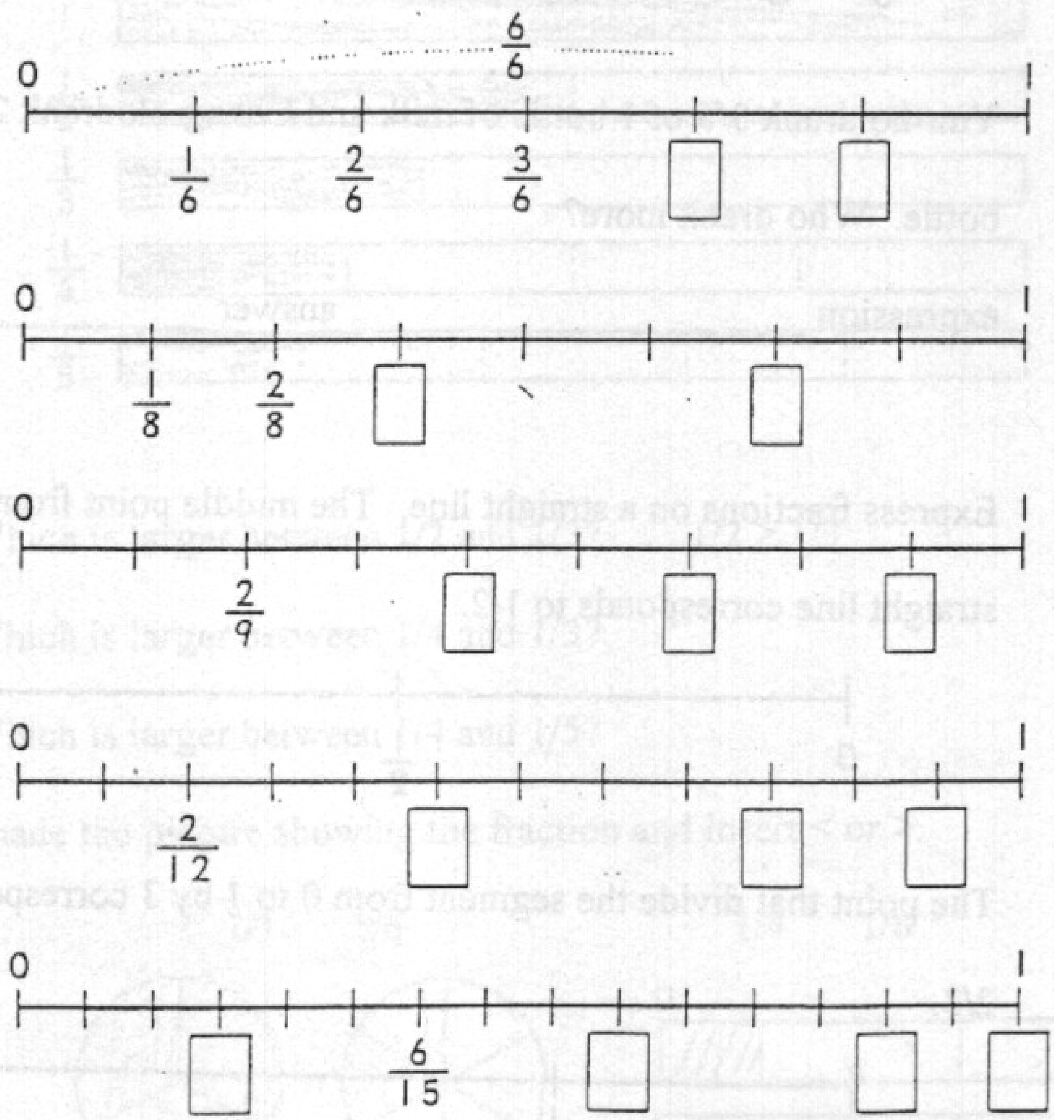
Correct the error as shown below. Point out that the starting point is 0, and be sure students know how to mark the fractions in relation to the divisions.



Worksheet 9-1

Name ____ Date ___________

Fill in the box □ with the right number.



Lesson 10: Adding and Subtracting Fractions with a Like Denominator

Objective: Each student will

- Understand the addition principal for proper fractions with the same denominator, using an equally divided quantity.
- Add proper fractions with the same denominator where the sum is less than 1.
- Understand the subtraction principal for proper fractions with the same denominator, using an equally divided quantity.
- Subtract proper fractions with the same denominator.

Lesson Resources:
Lessons 93 and 94 from Saxon Math 3, strips of construction paper

Missouri Grade Level Expectation:
Numbers & Operations 1B3: represents commonly used fractions: halves, thirds and fourths

Real Life Problem:
I have 3/8 of a candy bar. My brother gave me 2/8 of his candy bar. How much of a candy bar do I have now?

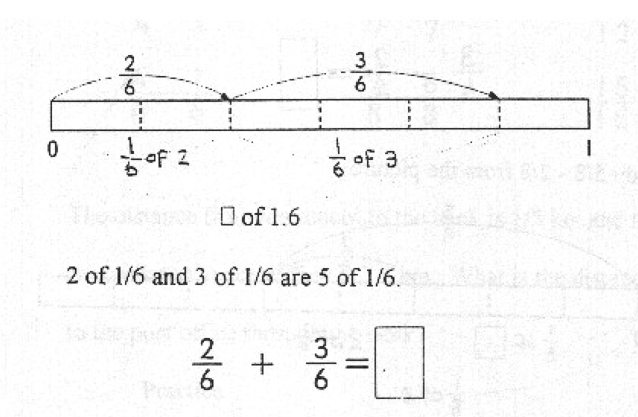
5/8m from 7/8 of a tape is used. What is the length of the tape left?

Demonstration:
Addition:
Use a strip of construction paper to show students how to perform the addition 2/6 + 3/6.

First, divide the construction paper into 6 equal parts. Mark 2/6 on the construction paper, then mark an additional 3/6, as shown.

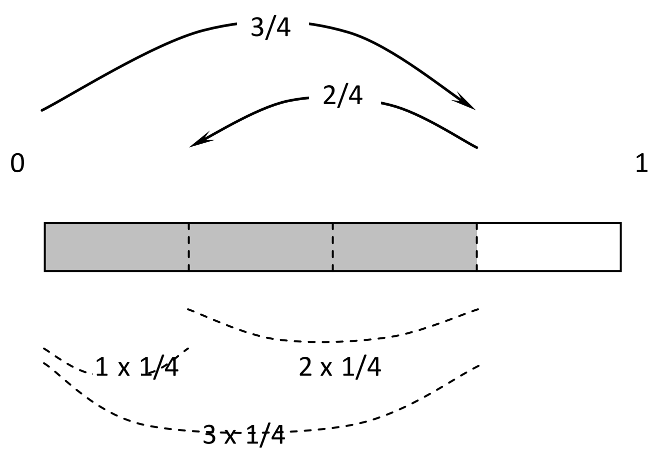
Next, get students to figure out how many 1/6's are in 2/6 and 3/6 and use this fact to add the two fractions as follows:

> 2/6 is two 1/6's, and 3/6 is three 1/6s.
> The sum of 2/6 and 3/6 is the sum of 2 times 1/6 plus 3 times 1/6. This is the same as (2 + 3) times 1/6, or five 1/6's. Five 1/6's is 5/6.
> Therefore, 2/6 + 3/6 = 5/6.



Subtraction:
Use a strip of construction paper and the following steps to help students see how to perform the subtraction 3/4 – 2/4. First, divide the tape into 4 equal parts. Mark 3/4 on the tape, then mark 2/4 to the left from ¾, as shown. Next, get students to figure out how many 1/4's are in 3/4 and 2/4 and use this fact to subtract the two fractions as follows:

> 3/4 is three 1/4's, and 2/4 is two 1/4's.
> The difference between ¾ and 2/4 is the difference between 3 times 1/4 and 2 times 1/4.
> This is the same as (3 – 2) times 1/4, or one 1/4. One 1/4 is ¼.
> Therefore, ¾ – 2/4 = 1/4.



Guided Practice:
Have students figure out the sum of 5/10 + 3/10 using the same steps in Demonstration.
Have students figure out the answer to 5/8 – 2/8 using the same steps in Demonstration.

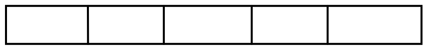
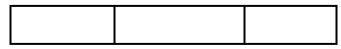
Independent Practice:
Have students solve the following problems:

1/3 + 1/3	4/9 + 4/9	9/14 + 5/14
3/4 - 2/4	8/10 – 5/10	11/16 – 8/16

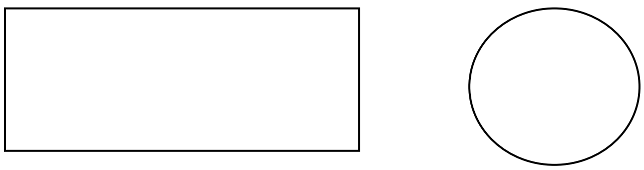
Name ____ Date ________________

Post Test

1. Shade the picture showing the fraction.

4/5  2/3 

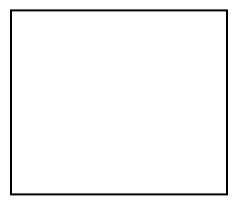
2. Divide each shape into thirds. Shade one third of each shape.



3. -Divide the square into 6 equal parts.

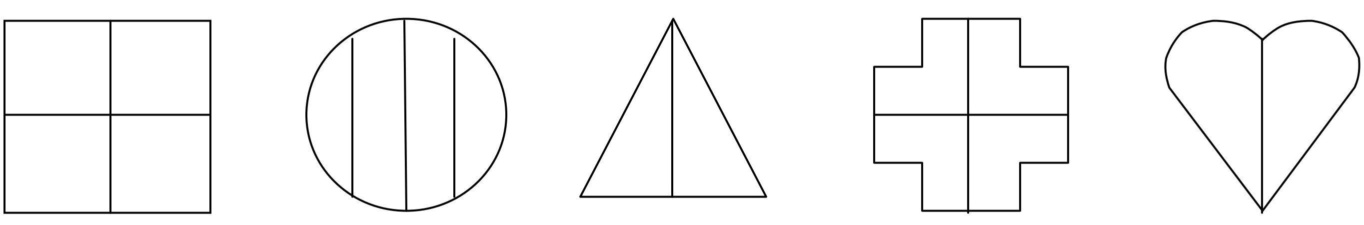
   -Shade five sixths.

   -Write a fraction to show what fractional part is not shaded. _______________



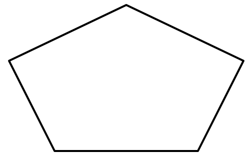
4. Show two different ways to divide a square in half.

5. Circle the figures that are divided into equal parts.



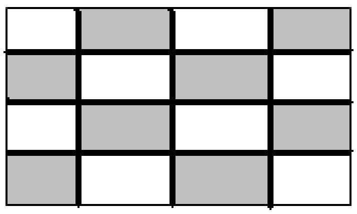
6. Divide the following shapes into the number of equal parts given.

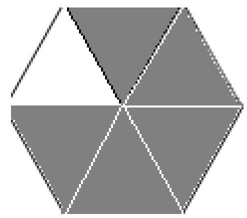
4



2

7. Write the fractions to show what part is shaded.





______ ______

8. There are 16 baseball cards. Sally wants to have 1/4 of 16. How many baseball cards would she get? ______________________________

9. Which fraction equals 1/2?

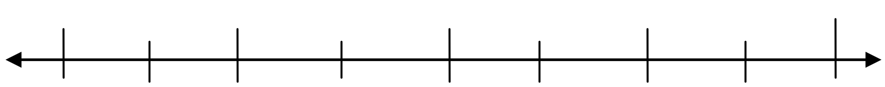
A. 3/4

B. 3/6

C. 1/4

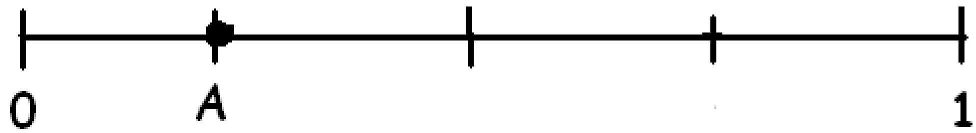
D. 5/6

10. Using mixed numbers, label the number line below.



5 6

11. What fraction is shown at point A on the number line?



A. 1/4 C. 4/4

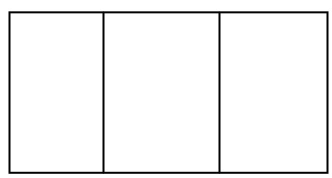
B. 3/4 D. 1/2

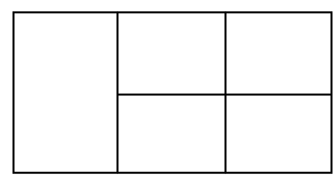
12. Calculate the following. Show work.

9/14 + 5/14 = 6/8 + 1/8 =

11/16 – 8/16 = 9/12 – 3/12 =

13. Label each piece of the squares. Write a fraction number sentence for each square.





____________________ = 1 ____________________ = 1 ____________________ = 1

14. The distance around the school track is ¼ mile. How many times around the track does Sam need to run in order to run two miles? _________________________

15. You have 6 cupcakes. Five sixths of the cupcakes have frosting on them. Draw a picture and write a fraction to show how many cupcakes do not have frosting on them.

____

16. List in order from least to greatest.

5/12 , 2/12 , 10/12 , 4/12 , 1/12 (____ , ____ , ____ , ____ , ____)

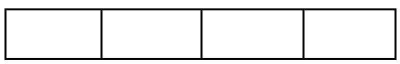
1/3 , 1/8 , 1/2 , 1/4 , 1/10 (____ , ____ , ____ , ____ , ____)

17. Insert < , > , or = between the two fractions:

7/8 2/8 3/6 5/10

18. Shade the picture showing the fraction.

3/5 

3/4 

Which is greater, 3/5 or 3/4? ____

How do you know? ____

____

19. Calculate the following. Show work.

$5\frac{2}{3} + 1\frac{1}{4} =$ $3/8 \times 2/3 =$

20. If each person at a party will eat 2/5 of a pound of M&Ms, and there will be 4 people at the party. How many pounds of M&Ms will be needed? Between what two whole numbers does your answer lie? ____________________

21. Write three different fractions that are equivalent to 1/3.

____

22. Calculate the following.

$4 \frac{1}{3} \times 2 \frac{1}{2}=$

23. How much chocolate will each person get if 5 people share 3/4 lb. of chocolate equally?

____

24. How many 1/4-cup servings are in 3 cups of grapes?

25. Carol cut $1 \frac{2}{3}$ inches off her hair three times last year. If she had not cut her hair, how much longer would it have been at the end of the year? _________________

26. Simplify the following fractions.

16/5 _____ 15/3 _____ 12/9 _____

27. Calculate the following. Show your work and simplify fraction

$4/5 \div 5/6 =$ $3/4 + 2\ 5/8 - 1/2 =$

28. What number is 5/8 of 320? __________

29. Evaluate xy – yt if x = 10, y = 1/2, and t = 4.

30. Find the reciprocal.

7/8 _____ 1/10 _____ 3 _____ 4 2/5 _____

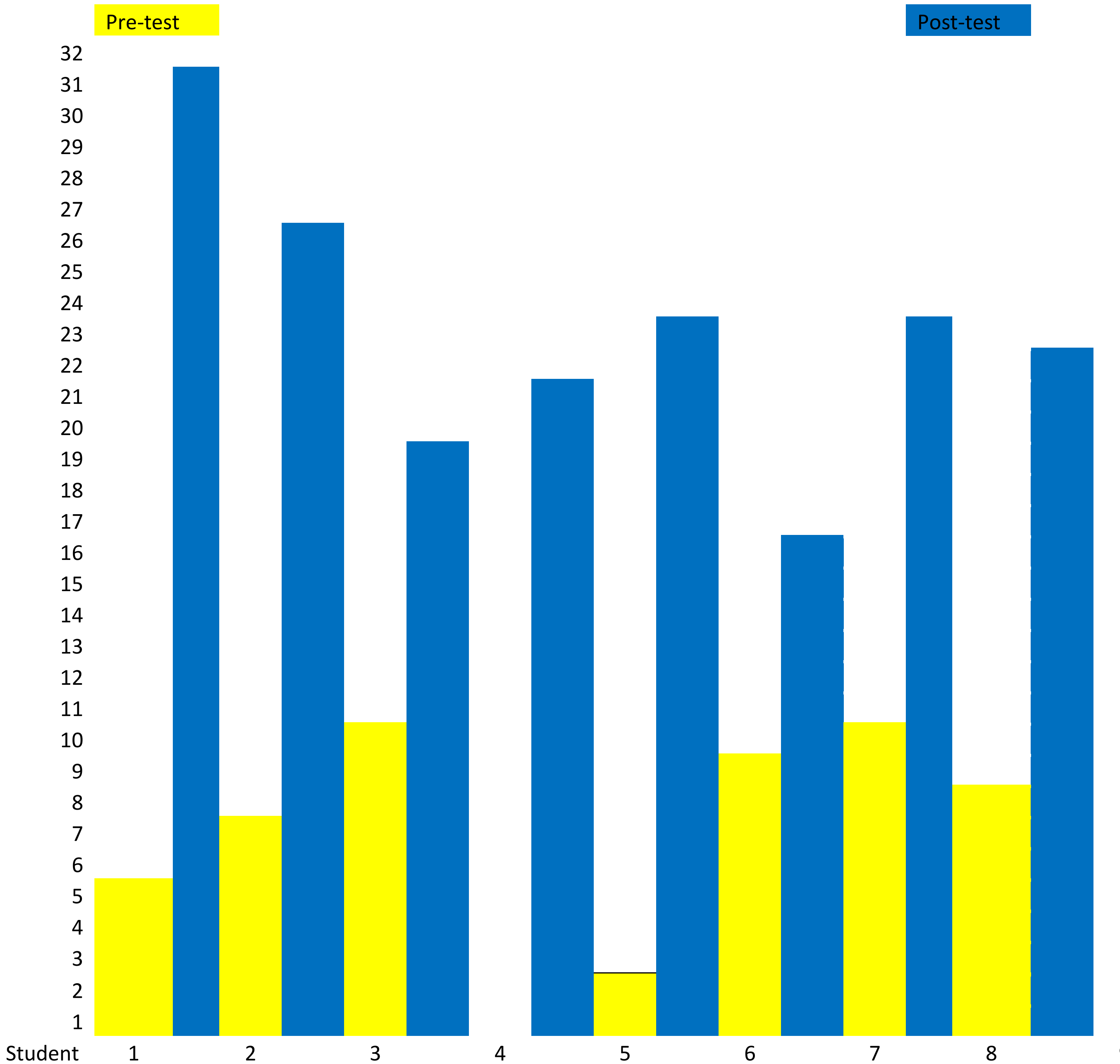
31. Complete the chart below.

FRACTION	DECIMAL	PERCENT
(a.)	0.8	(b.)
(c.)	(d.)	7%

Result- Teacher I

	Pretest Scores	Posttest Scores	Points Increased
Student 1	5	31	26
Student 2	7	26	19
Student 3	10	19	9
Student 4	0	22	22
Student 5	2	23	21
Student 6	9	16	7
Student 7	10	23	13
Student 8	8	21	13
Student 9	0	11	11

Module on Fractions for Grades 2-3 Graph.



As you can see from my graph, the students have made a lot of progress. Every student has improved. The areas that the students had the most difficulty with were the questions 8 and 9 of the test which was equivalent fractions and fraction of a number. Another area that they had difficulty with was adding fractions which were number 12. I believe that I always wrote the problems with a straight bar not slanted. When I went back and asked some of the students to answer the problems with a straight bar, most were able to get the problems correct. I incorporated the Gecko Math into the Saxon math lessons. These lessons were taught over a period of time. A lot of re-teaching of fractions was done with these units. I used these lessons with my third grade special education class. They have a wide range of skills. I like using the ideas that I learned throughout my math curriculum. I do think that by incorporating manipulatives, number lines and many hands on activities helps my student learn and retain more information.