

March Numeracy: Distance, Rate, and Time

Identify distance, rate, and time in word problems. Learn to solve word problems for distance, rate, and time using mental math, pencil and paper, or a calculator.

Materials include:

1. General explanation of unit
2. Terms for curriculum for all levels
3. Goals for each level
4. Suggested schedule for numeracy*
5. Content for teacher's "mini-lesson" per level
6. Worksheets per level
7. Instructions for class activity per level

General Explanation:

This month's numeracy lessons provide practice recognizing distance, rate and time in word problems. The daily 10 minute reviews will focus on mental math, and listening for distance, rate, and time in word problems. The worksheets will give students practice reading word problems and solving more complicated problems using a pencil and paper or learning to use a calculator. Additionally, levels 2-4 will learn about math formulas and will have practice using them to solve problems.

Again, there may be a wide spectrum of ability in your classroom. Offer the appropriate levels (mini-lesson and worksheets) to your students. Choose and target your mini-lessons to the level of the majority of the class OR feel free to divide the class into two sections (or more) and offer two mini-lessons if there is a need to do so.

****The worksheets this month require calculators.**

March: Distance, Rate, and Time

Terms for Curriculum for All Levels

Basic Numeracy Schedule: The schedule is designed as a four week unit. The teacher is responsible for configuring the schedule to the current month and year. Reviews, computer slots, and worksheet days are merely a suggestion. Adjust accordingly to meet the needs of your class.

mini-lesson: (ml) : Provided lesson plans for a short introduction to the material.

worksheet: (ws): Provided material for students; 3 per month.

Operation box: (ob): VSS worksheets in addition, subtraction, multiplication, and division**

10 minute review: Teacher picks a regular time every class for ten minutes of numeracy review. It is meant to be a quick practice of numeracy, primarily focused on receptive and expressive language.

The beginning of class or the end of class can be effective times. The teacher can have students turn to a clean notebook page, use their “math” notebook, or can have pre-cut papers ready to hand out.

Teacher reads: T reads and the class transcribes numbers

Student reads: S reads and the class transcribes (gives students practice speaking)

Checking Review Work: Students check their work. This can be a simple or creative process depending on time availability. Written answers are necessary in checking since the focus of the review is receptive/expressive language. This is also a time for practice with pronunciation or memorization of numbers/concept.

** Operation Boxes: (Continuation of October’s numeracy focus) I recommend that as a program you create four file boxes that contain practice worksheets for each of the functions (addition, subtraction, multiplication, division). It is best to offer a wide range of choices starting at very beginning levels and ending with more advanced worksheets. Students can then self-pace and work their way through the boxes during the year. Worksheets can come from websites offering free printables or workbooks.

March: Distance, Rate, and Time

Level 1

L1 Goals: Identify distance and time in word problems. Learn to solve word problems for distance and time using mental math, pencil and paper, or a calculator.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 (distance)	T gives simple word problem with 1 distance. S listens and writes down distance.	Computer	10 min review: operations box worksheet	ml 1; ws1	T gives simple word problem with 1 distance. S listens and writes down distance.
Week 2 (distance)	T gives simple word problem with 2 distances. S listens and adds distances for total distance.	Computer	10 min review: operations box worksheet	ml 2; ws 2	T gives simple word problem with 2 distances. S listens and adds distances for total distance.
Week 3 (time)	T gives simple word problem with total time traveled. S listens and writes time.	Computer	10 min review: operations box worksheet	ml 3; ws 3	T gives simple word problem with start time and end time (not long) and students figures total time.
Week 4 (time)	T gives simple word problem with start time and end time (over an hour) and students figure total time.	Computer	10 min review: operations box worksheet	ml 4: class activity	T gives simple word problem with start time and end time (several hours) and students figure total time.

Teacher is responsible for making up simple word problems. Adjust word problems to make them accessible for students—and also appropriately challenging (by adding extra info).

Distance Word Problems:

Ex: Variations of ways you can ask How far did she walk?

Ming walked three miles to school.

Ming walked three miles to school. When school was finished, she walked home.

Ming walked three miles to school. She left at 8:30 a.m.

Ming walked three miles to school. She walked another two miles to pick her children up.

Time Word Problems:

Ex: Variations of ways you can ask How long was Ali driving?

Ali drove for 15 minutes.

Ali left the house at 4:30 and arrived at 4:45.

Ali left the house at 4:30 and drove for 15 minutes in the car.

Ali left the house at 4:30 and arrived at 6:30.

Level 1: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

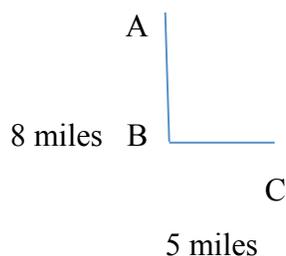
10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduction of distance
 - Distance: How far? (Give concrete examples: how many feet to the door, how far to McDonald's (across the street? down the block? etc.), how far to their house (miles? Bus routes?))
 - Gives names for distance: feet, miles, kilometers, blocks, bus stops, etc.
2. Adding Distance (explain with map and simple explanation; give names to A,B,C if easier for students to understand)
 - Point A to Point B = 1st distance
 - Point B to Point C = 2nd distance
 - Add 1st distance and 2nd distance together = total distance $8+5=13$ miles



3. Using a Calculator
 - Show students how to turn on calculators—and have them practice
 - Push in numbers; show “+” sign, show “=” and have them practice adding different numbers.

March: Distance, Rate, and Time

Level 1, WS 1

Name _____

Total Distance

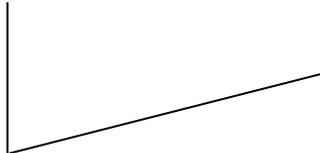
1. 7 miles



12 miles

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ miles}$$

2. 5 miles



14 miles

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ miles}$$

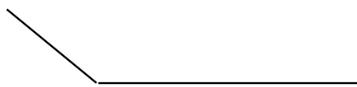
3. 3 miles



19 miles

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ miles}$$

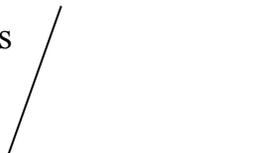
4. 4 miles



11 miles

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ miles}$$

5. 8 miles



13 miles

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ miles}$$

Level 1: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

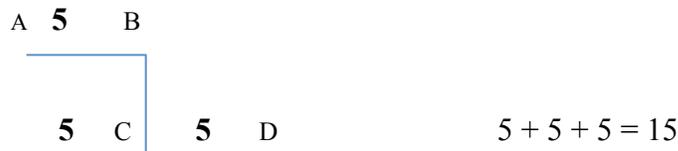
10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

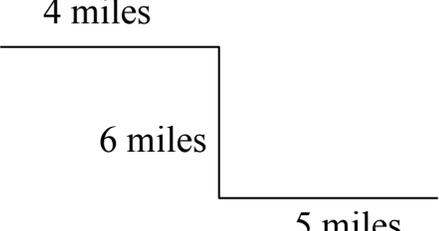
1. Review distance
 - Point A to Point B = Distance
 - Draw a simple map on the board with a few streets and places. Label the distance between places.
 - Go around the room and ask the distance (not adding; just single number distances) to see if students understand the basic concept.
2. Adding 3 Distances (explain with map and simple explanation; give names to A,B,C, D if easier for students to understand)
 - Point A to Point B = 1st distance
 - Point B to Point C = 2nd distance
 - Point C to Point D = 3rd distance
 - Add 1st distance, 2nd distance together, and 3rd distance together

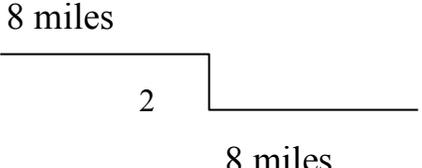


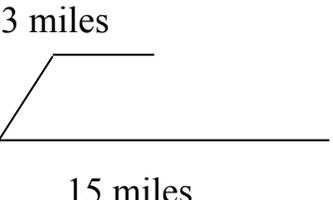
3. Using a Calculator
 - Push in numbers; show “+” sign, show “=” and have them practice adding 3 or 4 different numbers together.

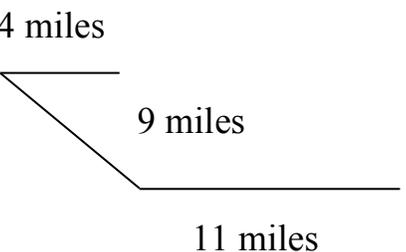
Name _____

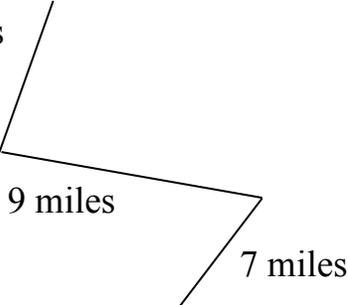
Total Distance 2

1.  _____ + _____ + _____ = _____ miles

2.  _____ + _____ + _____ = _____ miles

3.  _____ + _____ + _____ = _____ miles

4.  _____ + _____ + _____ = _____ miles

5.  _____ + _____ + _____ = _____ miles

Level 1: Mini lesson 3

Plan:

20 minutes for mini lesson (teacher led instruction)

0 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

Different whiteboard marker colors

Mini-lesson Content: *Do worksheet together

1. Review of Time

- Draw clock on board (circle only)
- Have student come up and label numbers on clock; count together
- Have student come up and draw hands to a specific time
- Remember minute hand and hour hand
- Review different times with minute hand and hour hand

2. Start on worksheet

- For every problem: Read to the class then have a student read. (Go over key vocab words: left, arrived, travel) Draw picture to illustrate word problem.
- Figure out together on the big board clock –and the individually.
- Have students write the numbers they need to subtract on their own worksheets (leave out hour—so just $16 - 5 = 11$). **Big number always goes first.
- Each student subtracts on calculator and writes answer...check as class each problem.
- Have students try last problem by themselves if they seem to be getting the concept.

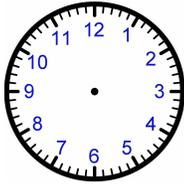
Name _____

How Many Minutes?

Use the clock to help you.

1. Lu left her house at 8:05. She arrived to school at 8:16.

How many minutes did she travel?



$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

2. Tom left his house at 9:30. He arrived to work at 9:54.

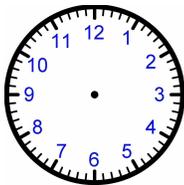
How many minutes did he travel?



$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

3. Ming left her house at 11:25. She arrived to the supermarket at 11:41.

How many minutes did she travel?



$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

March: Distance, Rate, and Time

Level 1: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

Materials Needed:

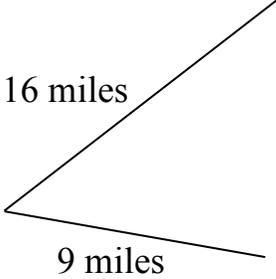
Calculator

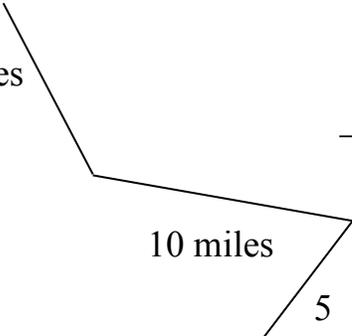
Activity Goal: Students will be required to show their distance and time numeracy skills completing a worksheet with a partner. You may choose to have pairs complete the worksheet only, or may make it into a race to see who can finish fastest, and/or may have partners grade the work of other pairs in the class.

Activity Description: Students work together with a partner to complete two distance problems and one time word problem. Check together or ask partners to grade others' work.

Name _____

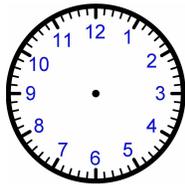
Distance and Time Partner Paper

1.  _____ + _____ = _____ miles

2.  _____ + _____ + _____ = _____ miles

3. Lu left her house at 10:20. She arrived to school at 10:37.

How many minutes did she travel?



_____ - _____ = _____ minutes

March: Distance, Rate, and Time

Level 2

L2 Goals: Identify distance and time in word problems. Learn to solve word problems for distance, rate and time using mental math, pencil and paper, or a calculator. Learn to use one formula ($d=rt$).

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 (distance)	T gives simple word problem with 1 distance. S listens and writes down distance.	10 min review: operations box worksheet	computer	ml 1, ws 1	T gives simple word problem with 2 distances. S listens and adds distances for total distance.
Week 2 (distance)	T gives simple word problem with 3 distances. S listens and adds distances for total distance.	10 min review: operations box worksheet	computer	ml 2; ws 2	T gives simple word problem with 3 long distances. S listens and adds distances for total distance.
Week 3 (time)	T gives simple word problem with total time traveled. S listens and writes time.	10 min review: operations box worksheet	computer	ml 3; ws 3	T gives simple word problem with start time and end time (not long) and students figure total time.
Week 4 (time)	T gives simple word problem with start time and end time (over an hour—in minutes) and students figure total time.	10 min review: operations box worksheet	computer	ml 4: class activity	T gives simple word problem with start time and end time (several hours—in minutes) and students figure total time.

Teacher is responsible for making up simple word problems. Adjust word problems to make them accessible for students—and also appropriately challenging (by adding extra info).

Distance Word Problems:

Ex: Variations of ways you can ask How far did she walk?

Ming rode the bus seven miles to school.

Ming rode the bus seven miles to school. When school was finished, she walked home.

Ming rode the bus seven miles to school. She left at 8:30 a.m.

Ming rode the bus seven miles to school. She walked another two miles to pick her children up. They rode the bus 8 miles home.

Time Word Problems:

Ex: Variations of ways you can ask How long was Ali driving?

Ali drove for 15 minutes; Ali drove for 65 minutes (convert to hours/min).

Ali left the house at 4:30 and arrived at 5:45.

Ali left the house at 4:30 and drove for 15 minutes in the car... what time did she arrive?

Level 2: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

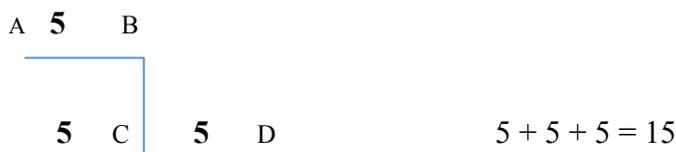
10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

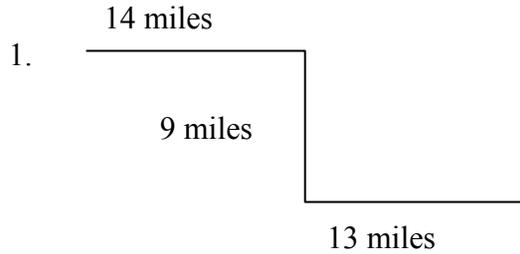
1. Introduce distance
 - Point A to Point B = Distance (We measure distance in inches, feet, yards, miles)
 - Draw a simple map on the board with a few streets and places. Label the distance between places.
 - Go around the room and ask the distance (not adding; just single number distances) to see if students understand the basic concept.
2. Adding 2 and 3 Distances (use your map from above and add 2 and 3 distances together)
 - Point A to Point B = 1st distance
 - Point B to Point C = 2nd distance
 - Point C to Point D = 3rd distance
 - Add 1st distance, 2nd distance together, and third distance together



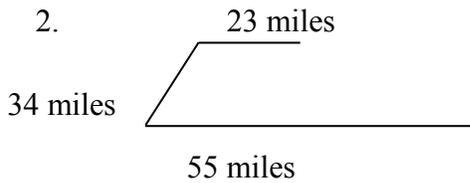
3. Using a Calculator
 - Push in numbers; show “+” sign, show “=” and have them practice adding 3 or 4 different numbers together.

Name _____

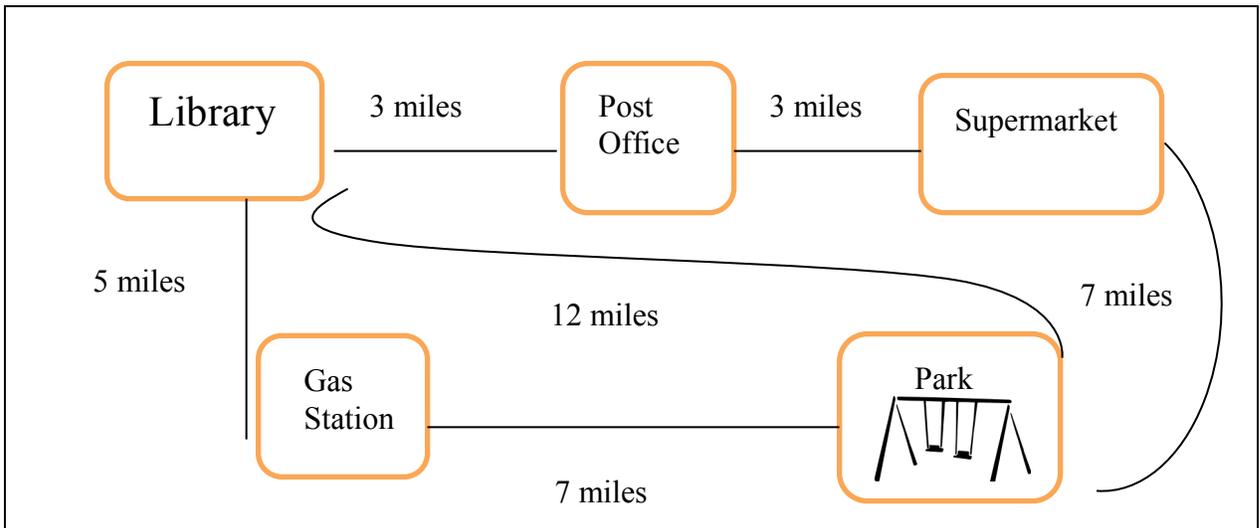
Total Distance 2



_____ + _____ + _____ = _____ miles



_____ + _____ + _____ = _____ miles



3. The library to the post office? _____ miles

4. The Gas Station to the Supermarket? _____ + _____ = _____ miles

5. The Post office to the library and park? _____ + _____ + _____ = _____ miles

6. The Supermarket to the Post office to the Gas Station?

_____ + _____ + _____ = _____ miles

March: Distance, Rate, and Time

Level 2: Mini lesson 2

20 minutes for mini lesson (teacher led instruction)

0 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

Different whiteboard marker colors

Mini-lesson Content: *Do worksheet together

1. Review of Time

- Draw clock on board (circle only)
- Have student come up and label numbers on clock; count together
- Have student come up and draw hands to a specific time
- Remember minute hand and hour hand
- Review different times with minute hand and hour hand

Start on worksheet together as class...

2. Using subtraction (on a calculator) to figure out time less than an hour

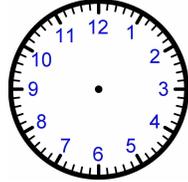
- Read first problem; Have a student read it again to the class
- Ignore hour hand and focus on minute hand.
- The big number goes on top...or first into the calculator
- Show students where “minus” key is on calculator.
- Solve individually and check together as you go through each problem.

3. Converting minutes to hours and minutes

- Review 60 minutes in one hour
- Put the big number in the calculator first and then subtract 60 minutes (1 hour) to get the rest of the minutes.
- Show students how to add numbers together to go from hours to minutes.

Name _____

How Much Time?



1. Mary left her house at 8:05. She arrived to school at 8:44.

How many minutes did she travel?

$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

2. Bao left his house at 9:18. He arrived to work at 9:59.

How many minutes did he travel?

$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

Convert from minutes to hours and minutes.

60 minutes = 1 hour

30 minutes = $\frac{1}{2}$ hour

3. 65 minutes = $\underline{\quad}$ hour and $\underline{\quad}$ minutes
4. 80 minutes = $\underline{\quad}$ hour and $\underline{\quad}$ minutes
5. 90 minutes = $\underline{\quad}$ hour and $\underline{\quad}$ minutes
6. $1 \frac{1}{2}$ hours = $\underline{\quad}$ minutes
7. 1 hour and 15 minutes = $\underline{\quad}$ minutes
8. 2 hours = $\underline{\quad}$ minutes

Level 2: Mini lesson 3

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula $\text{Distance} = \text{Rate} \times \text{Time}$

- Explain that there is a way you can find out how far away something is if you have two other numbers: time and rate.
- Explain what rate is: how fast something/someone is going (Walk slowly across the room and walk fast across the room to show how that can make a difference).
- Give students the “key words” to be able to identify rate and time (in box on worksheet).
- Tell students that they will get to solve word problems today by first finding the right numbers (rate and time) using their calculators to multiply and find out the distance.
- Show where the multiplication sign is on the calculator and practice multiplying a few numbers.

2. Start on the worksheet together and release students to independent work as they are able.

- Read problem to students—have a volunteer also read. Ask volunteers to identify the rate and the time.
- Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 2, WS 3

Name _____

Distance = Rate x Time

Distance = miles

Rate = per hour

Time = hours

1. Mohammed traveled from St. Paul to St. Cloud to visit family. He drove his car 65 miles per hour. It took him 1 hour. How far did he travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

2. Blia took the bus from St. Paul to Chicago. The bus averaged 70 miles per hour. It took her 8 hours. How far did she travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

3. Alfonzo walked from Como Zoo to Downtown St. Paul. He walked 3.5 miles per hour. It took him 2 hours. How far did he walk?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

March: Distance, Rate, and Time

Level 2: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

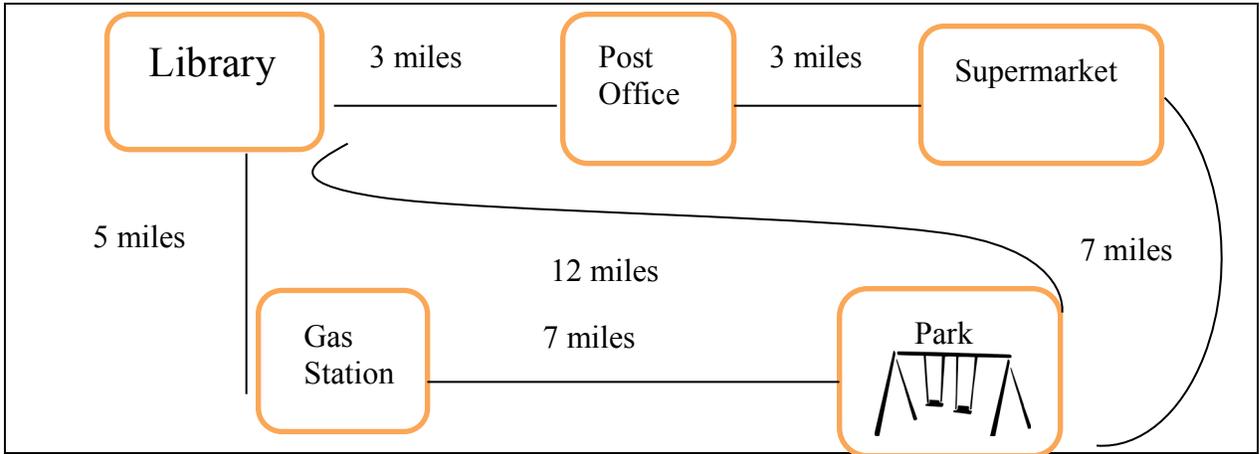
Activity Goal: Students will be required to show their distance, time, and $d=rt$ numeracy skills completing a worksheet with a partner. You may choose to have pairs complete the worksheet only, or may make it into a race to see who can finish fastest, and/or may have partners grade the work of other pairs in the class.

Activity Description: Students work together with a partner to complete the distance problems the time word problems and the $d=rt$ problem. Check together or ask partners to grade others' work.

Name _____

Distance, Rate, and Time Partner Paper

Distance



1. How far is the Gas Station from the Supermarket? _____ miles
2. How far is the Post Office from Park? _____ miles

Time: 60 minutes = 1 hour, 30 minutes = $\frac{1}{2}$ hour

3. 82 minutes = _____ hour and _____ minutes
4. 96 minutes = _____ hour and _____ minutes
5. $2\frac{1}{2}$ hours = _____ minutes

Rate x Time = Distance

6. Sal traveled from St. Paul to Rochester to visit family. He drove his car 70 miles per hour. It took him 2 hours. How far did he travel?

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & \text{X} & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} & \text{miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

March: Distance, Rate, and Time

Level 3

L3 Goals: Identify distance and time in word problems. Learn to solve word problems for distance, rate and time using mental math, pencil and paper, or a calculator. Learn to use two formulas ($d=rt$; $r=d/t$).

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 (distance)	computer	T gives simple word problem (extra info) with 1 distance. S listens and writes down distance.	10 min review: operations box worksheet	ml 1, ws 1	T gives simple word problem with 2 distances. S listens and adds distances for total distance.
Week 2 (distance)	computer	T gives simple word problem with 3 big distances. S listens and adds distances for total distance.	10 min review: operations box worksheet	ml 2; ws 2	Student reads simple word problem with 3 long distances. S listens and adds distances for total distance.
Week 3 (time)	computer	T gives simple word problem with total time traveled. S listens and writes time. (use min and ask for conversion to hrs/min)	10 min review: operations box worksheet	ml 3; ws 3	T gives simple word problem with start time and end time (not long) and students figures total time.
Week 4 (time)	computer	T gives simple word problem with start time and end time (over an hour—in minutes) and students figure total time.	10 min review: operations box worksheet	ml 4: class activity	S reads simple word problem with start time and end time (several hours—in minutes) and students figure total time (convert time).

Teacher is responsible for making up simple word problems. Adjust word problems to make them accessible for students—and also appropriately challenging (by adding extra info).

Distance Word Problems:

Ex: Variations of ways you can ask How far did she walk?

Ming rode the bus seven miles to school. When school was finished, she walked home.

Ming rode the bus seven miles to school. The bus drove 45 miles per hour. She left the house at 8:30.

Ming rode the bus twenty seven miles to school. She walked another two miles to pick her children up. They rode the bus 28 miles home.

Time Word Problems:

Ex: Variations of ways you can ask How long was Ali driving?

Ali drove for 75 minutes (convert to hours/min).

Ali left the house at 4:30 and arrived at 5:45.

Ali left the house at 4:35 and drove for 65 minutes in the car...what time did she arrive?

Level 3: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

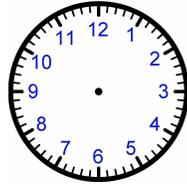
Different whiteboard marker colors

Mini-lesson Content:

1. Review of Time
 - Draw clock on board (circle only)
 - Review different times with minute hand and hour hand
2. Time less than one hour
 - If hour is the same, focus on minute hand and subtract to find difference.
 - Show students where “minus” key is on calculator.
 - If hour is different, add times up to the hour with time past the hour for the total.
3. Converting minutes to hours and minutes
 - Review 60 minutes in one hour
 - Put the big number in the calculator first and then subtract 60 minutes (1 hour) to get the rest of the minutes.
 - Show students how to add numbers together to go from hours to minutes.

Name _____

How Much Time?



1. Vue left his house at 8:07. He arrived to school at 8:51.

How many minutes did he travel?

$$\underline{\quad} - \underline{\quad} = \underline{\quad} \text{ minutes}$$

2. Mia left her house at 9:39. She arrived to work at 10:10.

How many minutes did she travel?

$$\underline{\quad} + \underline{\quad} = \underline{\quad} \text{ minutes}$$

(up to hour) (past hour)

Convert the time.

60 minutes = 1 hour

30 minutes = $\frac{1}{2}$ hour

3. 65 minutes = _____ hour and _____ minutes
4. 85 minutes = _____ hour and _____ minutes
5. 90 minutes = _____ hour and _____ minutes
6. $1 \frac{1}{2}$ hours = _____ minutes
7. 1 hour and 15 minutes = _____ minutes
8. 2 hours = _____ minutes
9. .5 hour = _____ minutes

Level 3: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula Distance = Rate x Time ($D=RT$)
 - Explain that there is a way you can find out how far away something is if you have two other numbers: time and rate.
 - Explain what rate is: how fast something/someone is going (Walk slowly across the room and walk fast across the room to show how that can make a difference).
 - Give students the “key words” to be able to identify rate and time (in box on worksheet).
 - Tell students that they will get to solve word problems today by first finding the right numbers (rate and time) using their calculators to multiply and find out the distance.
 - Show where the multiplication sign is on the calculator and practice multiplying a few numbers.
 - Also note that $\frac{1}{2}$ hour = .5 in the calculator
2. Start on the worksheet together and release students to independent work as they are able.
 - Read problem to students—have a volunteer also read. Ask volunteers to identify the rate and the time.
 - Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 3, WS 2

Name _____

Distance = Rate x Time

Distance = miles

Rate = per hour

Time = hours

1. Monroe traveled from Minneapolis to Pepin, Wisconsin to visit family. He drove his car 70 miles per hour. It took him $1\frac{1}{2}$ hours. How far did he travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

2. Jill took the bus from St. Paul to Chicago. The bus averaged 72 miles per hour. It took her $7\frac{1}{2}$ hours. How far did she travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

3. Bur rode his bike from home to work. He rode 10 miles per hour. It took him 30 minutes. How far did he ride his bike?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

Level 3: Mini lesson 3

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula $R=D/T$

- Today you are going to find out how fast something or someone is moving by using this new formula (write $\text{Rate} = \text{Distance} / \text{Time}$ on board).
- Review what rate is: how fast something/someone is going
- Give students the “key words” to be able to identify rate and time (in box on worksheet).
- Tell students that they will get to solve word problems today by first finding the right numbers (rate and time) using their calculators to divide and find out the rate.
- Show where the division sign is on the calculator and practice dividing a few numbers.

2. Start on the worksheet together and release students to independent work as they are able.

- Read problem to students—have a volunteer also read. Ask volunteers to identify the rate and the time.
- Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 3, WS 3

Name _____

Rate = Distance/Time

Distance = miles

Rate = per hour

Time = hours

1. Sarah rode her bike 6 miles to work in half an hour. How fast did she ride her bike?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

2. Lin took a taxi from the airport to his house 30 miles away. It took him 60 minutes because of an accident on the highway. How many miles an hour did the taxi go?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

3. Tang rode the train 246 miles from St. Paul to Fargo, North Dakota. It took him $3\frac{1}{2}$ hours. What was the speed of the train?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

March: Distance, Rate, and Time

Level 3: Culminating Group Activity

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

Activity Goal: Students will be required to show their numeracy skills completing a worksheet focusing on time, and word problems using two formulas with a partner. You may choose to have pairs complete the worksheet only, or may make it into a race to see who can finish fastest, and/or may have partners grade the work of other pairs in the class.

Activity Description: Students work together with a partner to complete the word problems using time calculations, $d=rt$ and $r=d/t$. Check together or ask partners to grade others' work.

Name _____

Distance, Rate and Time Partner Paper

1. George left his house at 4:17. He arrived to work at 5:09.

How many minutes did he travel?

$$\underline{\quad\quad} + \underline{\quad\quad} = \underline{\quad\quad} \text{ minutes}$$

(up to hour) (past hour)

2. 90 minutes = _____ hour and _____ minutes

3. 1.5 hours = _____ minutes

4. 1 hour and 45 minutes = _____ minutes

5. 2 hours = _____ minutes

6. .5 hour = _____ minutes

7. Bob rode his bike from home to school. He rode twelve miles per hour. It took him half an hour. How far did he ride his bike?

$$\underline{\hspace{2cm}} \text{ X } \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ miles}$$

Rate Time (in hours) Distance

8. Mary rode the bus 304 miles from Minneapolis to Iowa City. It her 4 hours and 30 minutes. What was the speed of the bus?

$$\underline{\hspace{2cm}} / \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ per hour}$$

Distance Time (in hours) Rate

March: Distance, Rate, and Time

Level 4

Level 4 Goals: Identify distance and time in word problems. Learn to solve word problems for distance, rate and time using mental math, pencil and paper, or a calculator. Learn to use three formulas ($d=rt$; $r=d/t$; $t=d/r$).

****All mental math for 10 Minute Reviews**

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 (distance)	T gives word problem (extra info) with 1 distance. S listens and writes down distance.	ml 1, ws 1	10 min review: operations box worksheet	computer	T gives word problem with 2 distances. S listens and adds distances for total distance.
Week 2 (distance)	S reads word problem with 3 big distances. S listens and adds distances for total distance.	ml 2; ws 2	10 min review: operations box worksheet	Computer	Student reads word problem with 3 long distances. S listens and adds distances for total distance.
Week 3 (time)	T gives word problem with total time traveled. S listens and writes time. (use min and ask for conversion to hrs/min)	ml 3; ws 3	10 min review: operations box worksheet	Computer	T gives word problem with start time and end time (use min and ask for conversion to hrs/min)
Week 4 (time)	S reads word problem with start time and end time (over an hour—in minutes) and students figure total time.	ml 4: class activity	10 min review: operations box worksheet	Computer	S reads word problem with start time and end time (several hours—in minutes) and students figure total time (convert time).

Teacher is responsible for making up word problems. Adjust word problems to make them accessible for students—and also appropriately challenging (by adding extra info). Every word problem should contain time, rate, and distance so students can learn to distinguish.

Distance Word Problems:

Simple Ex: Ming has to catch the 42 bus to downtown every morning. She left at 8 a.m. The bus picked her up at 8:06 and drove twelve miles to downtown averaging 45 miles an hour. She arrived at 8:45. How far did Ming go?

Time Word Problems:

Simple Ex: Joe travels 50 minutes to work every morning and 50 minutes home in the evening. How much time does he travel a day if he averages 60 miles an hour in his car for his 10 mile commute? (Convert to hours/min)

Level 4: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula $D=RT$

- Explain that there is a way you can find out how far away something is if you have two other numbers: time and rate.
- Explain what rate is: how fast something/someone is going
(Walk slowly across the room and walk fast across the room to show how that can make a difference).
- Give students the “key words” to be able to identify rate and time (in box on worksheet).
- Tell students that they will get to solve word problems today by first finding the right numbers (rate and time) using their calculators to multiply and find out the distance.
- Show where the multiplication sign is on the calculator and practice multiplying a few numbers.

2. Time

- Talk about time conversions for the calculator:
- $\frac{1}{2}$ hour = .5 in the calculator, $\frac{1}{4}$ hour = .25, $\frac{3}{4}$ hour = .75 (and how many minutes each of those are as well)

3. Start on the worksheet together and release students to independent work as they are able.

- Ask a volunteer also read. Ask volunteers to identify the rate and the time.
- Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 4, WS 1

Name _____

Distance = Rate x Time

Distance = miles

Rate = per hour

Time = hours

1. Mark traveled from Minneapolis to Pepin, Wisconsin to visit family. He drove his car 72 miles per hour. It took him $1\frac{1}{4}$ hours. How far did he travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

2. Ruth took the bus from St. Paul to Chicago. The bus averaged 75 miles per hour. It took her $6\frac{3}{4}$ hours. How far did she travel?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

3. Joshua rode his motorcycle home to work. He rode 50 miles per hour. It took him from 8:15 to 9:00 to get home. How far did he ride his motorcycle?

$$\begin{array}{ccccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \text{ miles} \\ \text{Rate} & & \text{Time (in hours)} & & \text{Distance} \end{array}$$

Level 4: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula $R=D/T$

- Today you are going to find out how fast something or someone is moving by using this new formula (write Rate = Distance / Time on board).
- Review what rate is: how fast something/someone is going
- Give students the “key words” to be able to identify rate and time (in box on worksheet).
- Tell students that they will get to solve word problems today by first finding the right numbers (rate and time) using their calculators to divide and find out the rate.
- Show where the division sign is on the calculator and practice dividing a few numbers.

2. Time

- Talk about time conversions for the calculator:
- 20 minutes = .33 (20/60) in the calculator, 40 minutes = .66 (40/60)

3. Start on the worksheet together and release students to independent work as they are able.

- Read problem to students—have a volunteer also read. Ask volunteers to identify the rate and the time.
- Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 4, WS 2

Name _____

Rate = Distance/Time

Distance = miles

Rate = per hour

Time = hours

1. Adam rode his bike 18 miles to work in 1 hour and 20 minutes. How fast did he ride his bike?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

2. Fartuun rode with a friend from the airport to her house thirty miles away. It took her $\frac{3}{4}$ of an hour because it was rush hour with heavy traffic. How fast could the car travel?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

3. Amir rode the train 529 miles from St. Paul to St. Louis, Missouri. It took him eight hours and twenty minutes. What was the average speed of the train?

$$\frac{\text{Distance}}{\text{Time (in hours)}} = \text{Rate per hour}$$

Level 4: Mini lesson 3

Plan:

10 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce Formula $T=d/r$
 - Today you are going to find out how much time it takes to go somewhere by using this new formula (write $\text{Time} = \text{Distance} / \text{Rate}$ on board).
 - Tell students that they will get to solve word problems today by first finding the right numbers (distance and rate) using their calculators to divide and find out the rate.
2. Start on the worksheet together and release students to independent work as they are able.
 - Read problem to students—have a volunteer also read. Ask volunteers to identify the rate and the distance.
 - Individual students use the calculator to solve and check together as a class.

March: Distance, Rate, and Time

Level 4, WS 3

Name _____

Time = Distance / Rate

Distance = miles

Rate = per hour

Time = hours

1. Lesley is walking to work. She has to walk three miles and she averages 4 miles an hour in good weather. How much time will it take her to walk to work?

$$\frac{\text{_____}}{\text{Distance}} \div \frac{\text{_____}}{\text{Rate}} = \frac{\text{_____}}{\text{Time}}$$

2. Bao rode an airplane from St. Paul to Dallas, Texas. The airplane travelled 550 miles per hour and covered 941 miles. About how long did it take Bao to make the trip?

$$\frac{\text{_____}}{\text{Distance}} \div \frac{\text{_____}}{\text{Rate}} = \frac{\text{_____}}{\text{Time}}$$

3. Cam drove from work to school. He had to drive twelve miles through neighborhood streets. He averaged forty miles an hour. If he left work at 3:30 p.m. what time did he get to work? _____

$$\frac{\text{_____}}{\text{Distance}} \div \frac{\text{_____}}{\text{Rate}} = \frac{\text{_____}}{\text{Time}}$$

March: Distance, Rate, and Time

Level 4: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

Materials Needed:

Calculator

Activity Goal: Students will be required to show their numeracy skills completing a worksheet with a partner to solve word problems using three formulas. Students will have to discern which formula they need to use to answer each problem. You may choose to have pairs complete the worksheet only, or may make it into a race to see who can finish fastest, and/or may have partners grade the work of other pairs in the class.

Activity Description: Students work together with a partner to complete the word problems using time calculations, $t=d/r$, $d=rt$ and $r=d/t$. Check together or ask partners to grade others' work.

March: Distance, Rate, and Time

Level 4, CA

Name _____

Distance, Rate and Time Partner Paper

$$\text{Distance} = \text{Rate} \times \text{Time}$$

$$\text{Rate} = \text{Distance} / \text{Time}$$

$$\text{Time} = \text{Distance} / \text{Rate}$$

1. Shirley rode an airplane from L.A., California to Minneapolis. The airplane travelled 550 miles per hour and covered 1925 miles. About how long did it take Shirley to make the trip? _____
2. Jacob rode his bike 36 miles for exercise in 2 hours and 20 minutes. How many miles per hour did he ride his bike? _____
3. Mao drove her car home from work. She drove an average speed of 50 miles per hour. It took her from 4:30 to 4:50 to get home. How far did she drive?
