Instructor’s Manual
(GREEN PAPER)

60 copies, 2-sided, stapled
Please make sure stapling is correct and consistent
Meeting 3 Fall 2017

Movie Ratings and Ratios

October 18th

Contents

1) Number Talk
2) Make a Scene
3) Lights, Camera... Ratios

www.math.uci.edu/mathceo
Movie Ratings and Ratios (Meeting 3, Oct 18)

- Identify the Leader mentor
- Write names of any new mentors and students
  (find form inside folder, write new names if needed)
- Place checkmarks in the Meeting 3 column (same form inside folder)
- Tell math goals to students in each activity
- Call students by name
- Keep students silence while doing Quiz
- Keep your table neat and clean at all times
- Get help if there are behavior problems before they escalate

- Quiz PROBLEM 1 (pink) (end of Activity 2)
- Student Survey (pink) (start survey at 3:35 PM)
- Fill Meeting Report (blue) (if you are the Leader)
- Put back into folder: Student Surveys (pink), Meeting Report (blue)
Meeting 3: Movies

Dear mentor,

In Meeting 3 we will explore and develop the notion of ratio. This includes understanding what a ratio means both abstractly and in real life context, using different concrete and visual ways to represent them, and understanding the connections between these representations.

Activity Breakdown

Activity 1 “Number Talks” (15 minutes)
Students develop number sense through guided group discussion.

Activity 2 “Make a Scene” (25 minutes)
Students express ratios in different concrete representations (using tokens) and understand how these representations relate.
- Assessment (5 minutes)

Activity 3 “Make a Movie” (25 minutes)
Students represent ratios visually (pasting images in movie rolls) and explore connections to fractions and percentages.

Math Goals

- 3:1 “3x”
Students understand that a ratio between two quantities is a multiplicative relation between them, but that is not enough to find the values of the quantities.

- Students can represent a ratio between two quantities using tokens and arranging them in different spacial ways, understanding their advantages.

- Students can represent a ratio by forming equal groups and also by creating a “bar” that separates those quantities.

- Given a ratio between 2 quantities, students can express it in terms of fractions (for example, in a ratio 2:3, one quantity is 2/5 of the total) and percentages, and given the total or one of the quantities, they can find the value of the other quantity.
MATERIALS & AGENDA

MATERIALS

INSTRUCTOR MANUAL
Green color

STUDENT WORKBOOK
White color

MEETING REPORT
Blue color
One per table
Online meeting report

STUDENT SURVEYS
(PERSONAL INCLUDED quiz)
Pink Color

WHITEBOARDS
One per student

DRY ERASE MARKERS
A pouch with several

AGENDA

- **2:10 pm** General Introduction 10’
- **2:20 pm** 1) Number Talks 15’
- **2:35 pm** 2) Make a Scene 25’
  - Quiz: Problem 1 5’
- **3:05 pm** 3) Lights, Camera... Ratios 30’
- **3:35** Student Survey 5’
- **3:40** End of the meeting

If you are missing any material, please ask one of our assistants and they will be able to help you.

They can also help take your students to the restroom.
INDIVIDUAL ASSESSMENT

- At the end of Part 2 (**Make a Scene**), there is time for an individual Quiz (**PROBLEM 1 IN THE PINK SURVEY**). Give students **5 minutes to do both parts A and B** and have them answer individually (in their surveys). After collecting answers, grade them and quickly correct them with the kids.

TIPS

- Build the habit of having students complete the quiz in complete silence and without any help of peers of mentors. This may take a few meetings, but make perfectly clear that we will work with these expectations. Do not ignore this.
- Correcting the Quiz after the students are done can help you check for understanding.

BEHAVIOR EXPECTATIONS

If a kid is behaving improperly or disrupting students, or does not follow directions at all, talk to them. If problem persists or is really serious, please let Brandi, Alessandra, Li-Sheng or an Assistant know immediately.

Refer to the expectations matrix and point to it if students are not meeting expectations.
## UCI Math CEO Meetings: Basic Guidelines for Volunteers

### TEACHING TIPS

This icon refers to specific tips which you will find embedded in the booklet activities: procedures, questions to ask to the students, recommended methodologies, and so on.

**Example:** After you introduce a new concept, it is a good idea to ask students to rephrase the concept, explain it in their own words. You can choose particular students, for example those who are disengaged.

**Example:** It is convenient to ask one student to read out instructions for a problem or definitions of a concept. This keeps your group focused on the task and improves their reading skills if you give feedback on reading.

### KNOW YOUR STUDENTS

Call students by their names most of the time: make sure they know your name, talk briefly about their day before you start the math activities.

### ASK FOR EXPLANATIONS

Ask students how they got their answers. Say things like “How do you know?”, “Why?”, “Draw a picture”, “Convince me!”, “Can you explain to Juan?”, etc.

### MOVE & MONITOR

Move around your table; monitor all students; use an adequate tone of voice; encourage kids to work in teams.

### CHECK WORK

Verify that the students write the answers to the problems and that they are correct and complete.

### AT THE END

Ask students to fill out the survey individually (no help), and to help pick up trash from the table and floor.

### 1. TEACHING TIPS

- **Can you explain the concept in your own words?**
- **Can someone read the instructions out loud?**

This icon means that the students should work individually in the corresponding problem, before discussing. Be flexible and adapt to your situation.

- **Activity to be done in pairs**

Note: if not specified, the booklet problem can be done as a group activity involving a discussion.
We describe an activity (taken from the book Making Number Talks Matter) called Number Talk. This is a warm-up activity and will last 15 minutes. There are several advantages: one of them is give more importance to conceptual understanding over knowing procedures without knowing why they work.

A Number Talk has two phases: an individual phase, and a discussion led by the mentor (asking questions and recording both answers and strategies). Avoid the temptation of explaining and doing the thinking yourself!

Our Goals:
To develop number sense and reasoning
A large group from a Circus Convention will stay at the hotel. You have received a distribution of people, which have requested to book a number of small rooms such that there are 3 people per room on average. How many rooms should we book?

Find the total revenue for these small rooms, given a discount chart for groups, depending on the number of rooms, and this year’s base price of $140 per room.

During last year’s Memorial Day the hotel rented 100 rooms for a base price of $140 (before applying the discount as in the chart). How does last year’s revenue compare to the revenue obtained for the 90 small rooms this year? Can you compare in terms of percentages?

1 NUMBER TALKS

Instructions

No Pencils & No Papers allowed

Students put their fists in their chest to show they are ready to start.

The mentor writes a problem in the whiteboard for kids to solve, and shows it

Mentor waits for students to solve the problem individually and silently. Kids put up their thumbs when they are ready. Give enough time.

When ready, the mentor records all answers from students (right or wrong) in a different whiteboard. Just record the answers. No judging or voting are allowed at this stage.

The Mentor asks if students want to explain how they figured the problem. Explaining the procedure (steps) is not enough, but they need to explain why it makes sense, why it works.

Use key words or diagrams to register the students explanations. Only mentors can write.

Dig deeper (after each strategy):
- Does anyone have a question for Juan?
- Can you say more about…?
- Can someone explain Juan’s strategy in your own words?
- What connections do you notice among the strategies we have so far?
A large group from a Circus Convention will stay at the hotel. You have received a distribution of people, which have requested to book a number of small rooms such that there are 3 people per room in average. How many rooms should we book?

Find the total revenue for these small rooms, given a discount chart for groups, depending on the number of rooms, and this year's base price of $140 per room.

During last year's Memorial Day the hotel rented 100 rooms for a base price of $140 (before applying the discount as in the chart). How does last year's revenue compare to the revenue obtained for the 90 small rooms this year? Can you compare in terms of percentages?

Remember to use the Discount chart.

1. What is $86 \times 6$?
2. What is $1.25 \times 14$?
3. What is $86 \div 7$?
4. What is $949 \div 8.5$?

**Examples of strategies (there may be several more)**

- $86 \times 6$: (i) Multiply 86 by 5, then add 86. (ii) Multiply 86 by 3, then duplicate. (iii) Duplicate 86, and then triplicate. (iv) Do $80 \times 6$, then $6 \times 6$, and add the results. (v) Do $85 \times 5$, then add 5 & 86
- $1.25 \times 14$: (i) First do $1.25 \times 7$ and then duplicate. (ii) Duplicate 1.25 and then multiply by 7. (iii) Do $1.25 \times 10$, $1.25 \times 4$ and add the results. (iv) First do $1.25 \times 15$ (multiply by 3, then by 5), and then subtract $1.25$. (v) First calculate $1.25 \times 16$ (by duplicating 4 times) and then subtract 2.5.
- $86/7$: Make towers of 7: $7 \times 1 = 7$, ..., $7 \times 10 = 70$, $7 \times 11 = 77$, $7 \times 12 = 84$. So answer is 12 plus $2/7$.
- $949/8.5$: towers: $8.5 \times 100 = 850$. $949-850 = 99$. Now $8.5 \times 10 = 85$ and $99-85=14$. So answer is $100+10+14/8.5$, which is $111 + (5.5 / 8.5)$ or 111 plus $11/17$. (Approx: $111 + 2/3$)

Note: approximated answers are also encouraged, as long as the reasoning is mathematically correct.
**MAKE A SCENE**

Our Goals:
Become familiar and fluent with representing ratios and the words to describe ratios

**Discuss in your group. Everyone talks.**

1. What does a ratio represent? Can you give some examples? What is the ratio boys : girls in your table?

2. When are two ratios the same (“equivalent”)? How do we know that the ratios 2:3 and 4:6 are the same? Convince yourself with a picture.

3. You have two pipes of the same thickness. One of length 12 ft full with white salt, the other of length 18 ft full with pink salt. If you join the pipes to create a big 30 ft pipe, and mix it well, how much white sand will there be in a 10 ft piece of the pipe? Explain your reasoning.
2) MAKE A SCENE

2.1 REPRESENT THE SCENE

Materials

- Tokens of different colors (around 150 total).
- Pages 2-3 in the Student Workbook

Represent (pair and share)

Make each student choose a movie scene to represent (which specifies a certain ratio between two elements --animals, people, things, etc--). Dialogue with students to encourage that all 4 scenes are analyzed (with possible repetitions). Give students 3 minutes to complete: after 3 minutes ask how much more time they need and give extra 1-3 minutes. This can help students manage their time.

Example:

The movie set represents a party of creatures. Include at least 17 creatures, among giants and dwarves. The ratio giants : dwarves must be 3 : 5.

Once every student is done, pair each student to another one. In pairs, students explain their scenes to each other. Monitor these interactions by asking questions and different ways to rearrange the tokens (forming a line, forming small groups, in a table, etc). Give 3-5 minutes for this.
Choose one of the following descriptions to represent a movie on your whiteboard set using tokens of two different colors. Make sure to be clear on your conventions.

Once you are done get ready to explain your scene to another person.

The movie set represents an enchanted forest, with trees and deers. The ratio trees to deers must be 4 : 3, and there has to be at least 10 trees.

The movie set represents a beach full of boats and pirates. More than 13 pirates must be included. For every 6 pirates, include 2 boats.

The movie is about a Space Adventure. Include planets and stars at a ratio of 12 : 54. Make sure that exactly 6 planets appear in the movie.

The movie set represents a party of creatures. Include at least 17 creatures, among giants and dwarves. The ratio giants : dwarves must be 3 : 5.
2) MAKE A SCENE

2.1 REPRESENT THE SCENE

X’s and O’s

Now ask students to represent the ratio between x’s and o’s of 3:2 in the whiteboard or in paper, using between 17 and 21 symbols in total (the symbols are either x, or o).

After students have done the task, do it yourself also both in your whiteboard and using the tokens. Do it in such a way that you form a “bar” separating the two symbols, and symbols are equally spaced. For example: x x x x x x x x x x x o o o o o o o o o o. Tell the students that this is a “bar representation”.

Ask them if there are other ways to represent the ratio. Kids should discover at least the following two ways:

Can you tell the relation between this bar and the example about sand pipes? Explain this relation in detail.
2) MAKE A SCENE

● Equal groups:

- Table:

There might be other variations of these representations which your students might discover, but tell them that you will concentrate in these three, which we summarize:

a) Bar: we separate the quantities, forming a bar. We can do it in two different ways: (i) drawing all x’s and numbers to indicate how many of each symbol.

b) Equal groups: We form equal groups, each having the same ratio. In the example, we formed 4 equal groups, each of 3 x’s and 2 os’.

c) Table: We form a table where the columns (vertical lines) are of the same symbols: the first columns have one symbol (x) and the last columns have the other symbol (o).

How can you tell the ratio from the ‘equal groups’ or “table” representations without counting all the 20 elements? Explain your reasoning.
Materials

- About 150 tokens of different colors
- Pages 4-5 in the Student Workbook
- 9 Dice

Divide the students in teams of 2 (you can mix students by ability, you pick the pairs) and each team follows the same steps, collaborating. First give 30 tokens to each team (2 colors, 15 of each color).

1) Roll two dice. This determines the ratio between the colors (they choose which colors) for the representation.
2) Roll a die: the result will determine how to represent the ratio:
   1-2: use bars: both using the tokens and drawing one on the board (with numbers).
   3-4: use equal groups
   5-6: use a table.
   Note: use at least 18 tokens in total to represent the ratio.
3) Now change your representation to another one you choose.
   Repeat this several times.

Once students are comfortable with the previous task, do the same activity with the whole group. You roll the 3 dice (two for step 1 and one for step 2) and ask one student to represent the ratio. Then ask a different student to change the representation to a different one.
Example:

1) Juan and Eva roll two dice and obtains a 6 and a 4. He will choose tokens to represent the 6 : 4 (or 3 : 2) ratio.
2) Juan and Eval roll a 2, so they will use bars.
   a) Juan and Eva pick 12 red tokens and 8 green tokens, and place them equally spaced, as shown:

   ![Image of 12 red tokens and 8 green tokens]

   b) They also draw the following bar model on the whiteboard:

   
   ![Image of bar model]

   12 red  |  8 green

3) Juan and Eva now choose to form equal groups. Juan does the following configuration:

   ![Image of equal groups]

   Ana agrees that Juan’s idea is correct, but she suggests to make even smaller groups, to better visualize the 3:2 ratio:

   ![Image of even smaller groups]
LIGHTS, CAMERA... RATIOS

Our Goals:
- Represent ratios using pictures in a strip, in different ways.
- Use information about quantities given in ratios as a tool to solve problems.
- Express ratios in terms of fractions and percentages.

Discuss in your group. Everyone talks.

1. What is your favorite movie involving water (sea, oceans, rivers, etc)?
   Approximately what fraction or percentage of the movie occurred in the water?

2. If you were to make a movie with both land and water scenes, what time ratio between these would you choose? Draw a picture or diagram.

3. A movie has a time ratio of 1 : 20 of land to sea scenes and the total time for sea is 15 minutes. What is weird about this?
3) LIGHTS, CAMERA... RATIOS

Materials

- 8 Movie Rolls (each with 15 spaces)

- A kit with 80 images of land and sea (for the students to paste them in the movie rolls)

- Tape to paste images

- Pages 4-6 in the Student Workbook

Introduction

In this activity, students will receive 6 descriptions of movies and they will create movie rolls to represent them, by pasting images of scenes of land and sea. We assume that for a given movie, all images in the roll have the same duration. However, different movies may have different durations for their images.

Furthermore, students will link each movie they make with one comment that matches that information, from a collection of different comments. This is a collaborative activity. Encourage students to communicate.

Instructions

Tell your students that we will read descriptions of 6 different movies which are special because they are divided between action in the sea and action in land: there is no other type of landscapes in these movies. Example: King Kong lasts 120 minutes: 80 happen in land and the other 40 happen in the sea.
Demonstration (5 minutes)

Make a demonstration of how the activity will be done by reading the following description: The Movie “High Peaks, Low Sea” lasts a total of 135 minutes and the ratio of time sea : land is of 6 : 3. Explain that in this movie, for every 6 minutes of sea time there are 3 minutes of land time. Or that the ratio is the same of 2:1 (explain why), so that the sea time is two times the mountain time.

Ask students to collaborate in creating a movie roll by pasting the pictures inside the spaces: you do NOT need to use all 15 spaces. For example, use 9 spaces only. Choose 6 sea pictures and 3 land pictures and tell your students to decide how to paste them: as a bar, or by 2 or more equal groups (this terminology comes from Activity 2). Some students may say that randomly, but explain that to find patterns is better to use bars or equal groups in this activity.

### Bar representation
All 6 sea images to the left, all 3 land images to the right.

### Equal groups representation
Three groups, each with 2 seas and 1 land.

Indicate the movie duration as follows: place the movie roll over 2 whiteboards and tag the total movie duration as well as the duration of each image. If you used bars, also tag the duration of each landscape time. Discuss the multiplicative relations between the ratios and all of these times.
Making movies and Matching to comments (15-20 minutes)

Explain students that they will receive descriptions of six different movies, to build a Movie Roll for each of them as you did in the demonstration. Some notes that you can tell your students:

- You do **NOT** need to use all 10 spaces. Just fold the roll to cover the unused spaces. However, use as many spaces as you can!
- You can choose to arrange the images either by **bar** (separate landscapes) or by **equal groups** (each group having the indicated ratio).
- Remember to indicate the total movie duration as well as the duration of each landscape image (if you used bars) or the duration of each group (if you used equal groups). Remember that we are assuming that when building a particular movie, all images have the same duration.

Also tell your students that they need to match each movie with a viewer’s comment that correspond to it. There are more comments than movies; tell your students that some comments may not correspond to any of the movies.

Students can chose the order in which to execute the tasks: they could first build all movie rolls and then do the comment matching, or alternate between these.
Building Movie Rolls

Work collaboratively!

For each of the following movies, create a movie roll by pasting the images of land and sea, to match the time ratio. Assume that all images represent the same time duration.

**3) LIGHTS, CAMERA... RATIOS**

**INTO THE WILD**
- The movie lasts 150 minutes and the time in land is 4 times as much as the time in the sea.

**KING KONG**
- The movie lasts 120 minutes and for every minute in the sea, there are 2 minutes in land.

**LIFE OF PI**
- The movie lasts 100 minutes and half of the movie takes place in the sea, the rest in land.

**LE GRAND BLEU**
- The time ratio land to sea in the movie is 2:3 and the land part of the movie lasts 70 minutes.

**THE JUNGLE BOOK**
- The movie lasts 140 minutes and the ratio of time sea: land is 2:12.

**JAWS**
- The movie lasts 80 minutes and the ratio sea to land is 36:12.

Tips:
- You don’t need to use all 10 blank spaces, but use as many as possible.
- Create 3 rolls using “bar” representations, and the other 3 using “equal groups”. You chose!
## SOLUTIONS  (L = Land, S = Sea)

<table>
<thead>
<tr>
<th>Movie</th>
<th>Ratio L : S</th>
<th>Percentages. L ; S</th>
<th>Fraction L ; S</th>
<th>Duration (min) L ; S</th>
<th>Total duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTO THE WILD</td>
<td>4 : 1</td>
<td>80% ; 20%</td>
<td>4/5 ; 1/5</td>
<td>120 ; 30</td>
<td>150</td>
</tr>
<tr>
<td>KING KONG</td>
<td>2 : 1</td>
<td>66.6% ; 33.3%</td>
<td>2/3 ; 1/3</td>
<td>80 ; 40</td>
<td>120</td>
</tr>
<tr>
<td>LIFE OF PI</td>
<td>1 : 1</td>
<td>50% ; 50%</td>
<td>1/2 ; 1/2</td>
<td>50 ; 50</td>
<td>100</td>
</tr>
<tr>
<td>LE GRAND BLEU</td>
<td>2 : 3</td>
<td>40% ; 60%</td>
<td>2/5 ; 3/5</td>
<td>70 ; 105</td>
<td>175</td>
</tr>
<tr>
<td>THE JUNGLE BOOK</td>
<td>6 : 1</td>
<td>86% ; 14%</td>
<td>6/7 ; 1/7</td>
<td>120 ; 20</td>
<td>140</td>
</tr>
<tr>
<td>JAWS</td>
<td>1 : 3</td>
<td>25% ; 75%</td>
<td>1/4 ; 3/4</td>
<td>20 ; 60</td>
<td>80</td>
</tr>
</tbody>
</table>
### Movie Reviews: Matching comments with the previous movies

Work collaboratively!

10 people made comments about some movies they saw. For each comment, find the unique movie from the previous six (if that is the case) corresponding to that comment, and write the corresponding letter of the movie (P-U) in the circle. If a comment does not apply to any of the previous movie, do not match it and write N/A in the circle.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time period</th>
<th>Calories</th>
<th>Cal / min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing Video Games</td>
<td>30 min</td>
<td>42</td>
<td>0.14</td>
</tr>
<tr>
<td>Walking</td>
<td>30 min</td>
<td>80</td>
<td>0.27</td>
</tr>
<tr>
<td>Running</td>
<td>10 min</td>
<td>115</td>
<td>11.5</td>
</tr>
<tr>
<td>Dancing</td>
<td>30 min</td>
<td>200</td>
<td>0.67</td>
</tr>
<tr>
<td>Jumping Rope</td>
<td>1 min</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

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#### Comments and Matches

- **A perfect time balance of land and sea scenes.**
  - Matched to: [Movie A] (P)

- **Thrilling movie. The 40 minutes in the sea have great special effects.**
  - Matched to: [Movie B] (U)

- **I liked this movie, but those 20 minutes of sea were not that enjoyable to me.**
  - Matched to: [Movie C] (U)

- **The movie was exciting: 1/6 of it took place in the sea, and I enjoyed every second.**
  - Matched to: [Movie D] (P)

- **I wish the movie had more time on land… it was only 1/3 of it.**
  - Matched to: [Movie E] (P)

- **The half an hour part in the water felt slow but it made me think a lot.**
  - Matched to: [Movie F] (P)

- **Only 1/4 of the movie takes places in land, talk about a deep experience!**
  - Matched to: [Movie G] (U)

- **60% of the movie was in the sea, which I loved.**
  - Matched to: [Movie H] (P)

- **36 minutes of the movie were in the sea… Wow it was good!**
  - Matched to: [Movie I] (U)

- **The land part was 3 times as exciting and 3 times as long as the sea part.**
  - Matched to: [Movie J] (P)
A perfect time balance of land and sea scenes.

Thrilling movie. The 40 minutes in the sea have great special effects.

I liked this movie, but those 20 minutes of sea were not that enjoyable to me.

The movie was exciting: 1/6 of it took place in the sea, and I enjoyed every second.

I wish the movie had more time on land... it was only 1/3 of it.

The half an hour part in the water felt slow but it made me think a lot.

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Student’s Workbook
(WHITE PAPER)
6 pages

128 Copies, 2-sided, stapled
Meeting 3 Fall 2017

Movie Ratings and Ratios
October 18th

Contents

1) Number Talk
2) Make a Scene
3) Lights, Camera… Ratios
2

MAKE A SCENE

Our Goals:
Become familiar and fluent with representing ratios and the words to describe ratios

Discuss in your group. Everyone talks.

What does a ratio represent? Can you give some examples? What is the ratio boys : girls in your table?

When are two ratios the same ("equivalent")? How do we know that the ratios 2:3 and 4:6 are the same? Convince yourself with a picture.

You have two pipes of the same thickness. One of length 12 ft full with white salt, the other of length 18 ft full with pink salt. If you join the pipes to create a big 30 one, and mix it well, how much white sand will it be in a 10 ft piece of the pipe? Explain your reasoning.

| 12 | 18 |
Choose one of the following descriptions to represent a movie on your whiteboard set using tokens of two different colors. Make sure to be clear on your conventions. Once you are done get ready to explain your scene to another person.

The movie set represents an enchanted forest, with trees and deers. The ratio trees to deers must be 4 : 3, and there has to be at least 10 trees.

The movie set represents a beach full of boats and pirates. More than 13 pirates must be included. For every 6 pirates, include 2 boats.

The movie represents a party of creatures. Include at least 17 creatures, among giants and dwarves. The ratio giants : dwarves must be 3 : 5.

The movie is about a Space Adventure. Include planets and stars at a ratio of 12 : 54. Make sure that exactly 6 planets appear in the movie.
LIGTHS, CAMER... RATIOS

Our Goals:
- Represent ratios using pictures in a strip, in different ways.
- Use information about quantities given in ratios as a tool to solve problems.
- Express ratios in terms of fractions and percentages.

Discuss in your group. Everyone talks.

What is your favorite movie involving water (sea, oceans, rivers, etc)?
Approximately what fraction or percentage of the movie occurred in the water?

If you were to make a movie with both land and water scenes, what time ratio between these would you choose? Draw a picture or diagram.

A movie has a time ratio of 1 : 20 of land to sea scenes and the total time for sea is 15 minutes. What is weird about this?
3) LIGHTS, CAMERA... RATIOS

Building Movie Rolls

Work collaboratively!

For each of the following movies, create a movie roll by pasting land and sea scenes, to match the time ratio. Assume that all scenes have the same time duration. What is the length of each scene in your movie?

Tips:
- You don’t need to use all 10 blank spaces, but use as many as possible.
- Create 3 rolls using “bar” representations, and the other 3 using “equal groups”. You choose!

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<tr>
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<td>P</td>
<td>R</td>
<td>S</td>
<td>T</td>
<td>U</td>
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The movie lasts 150 minutes and the time on land is 4 times as long as the time in the sea.
The movie lasts 120 minutes and for every minute in the sea, there are 2 minutes on land.
The movie lasts 100 minutes and half of the movie takes place in the sea, the rest on land.
The time ratio land to sea in the movie is 2:3 and the land part of the movie lasts 70 minutes.
The movie lasts 140 minutes and the “sea:land” time ratio is 2:12.
The movie lasts 80 minutes and the ratio sea to land is 36:12.
Movie Reviews: Matching comments with the previous movies

Work collaboratively!
10 people made comments about some movies they saw. For each comment, find the unique movie from the previous six (if that is the case) corresponding to that comment, and write the corresponding letter of the movie (P-U) in the circle. If a comment does not apply to any of the previous movie, do not match it and write N/A in the circle.

A perfect time balance of land and sea scenes.
Thrilling movie. The 40 minutes in the sea have great special effects.
I liked this movie, but those 20 minutes of sea were not that enjoyable to me.

The movie was exciting: 1/6 of it took place in the sea, and I enjoyed every second.

I wish the movie had more time on land... it was only 1/3 of it.

The half an hour part in the water felt slow but it made me think a lot.

60% of the movie was in the sea, which I loved.

Only 1/4 of the movie takes places in land, talk about a deep experience!

36 minutes of the movie were in the sea... Wow it was good!

The land part was 3 times as exciting and 3 times as long as the sea part.
Manipulatives

You don’t have to print or cut these manipulatives. We will have these at the meeting.

- **p35 ACTIVITY 3 > Movie rolls:** Make 160 copies (1-sided) (8 per table).
  - Form kits of 8 rolls each, joined with a clip.
- **p36-39 ACTIVITY 3 > Images of sea and land:** Make 20 copies, one sided
  - P36-37: sea images blue paper
  - P38-39: land images, brown/camel paper

Cut all 80 cards to form one kit (form 20 kits total, one per table). Place each kit in a plastic bag, and tag the bag with:

“Activity 3: Sea & Land images”
MEETING 03 - MANIPULATIVES
ACTIVITY 3) LIGHTS, CAMERA... RATIOS

Movie Rolls
Cut and Paste to form 1 roll (each roll has 10 spaces)
MEETING 03 - MANIPULATIVES
ACTIVITY 3) LIGHTS, CAMERA... RATIOS

Sea & Land Images
Print (blue) & Cut all 20
MEETING 03 - MANIPULATIVES
ACTIVITY 3) LIGHTS, CAMERA... RATIOS

Sea & Land Images
Print (blue) & Cut all 20
MEETING 03 - MANIPULATIVES
ACTIVITY 3) LIGHTS, CAMERA... RATIOS

Sea & Land Images
Print (Brown) & Cut all 20

Sea & Land Images
Print (Brown) & Cut all 20

Sea & Land Images
Print (Brown) & Cut all 20
Student Survey
(Pink paper)
128 copies
1-sided
Once you get the student survey (perception) from Alessandra, print it on the back
Please answer all questions individually

PROBLEM 1
(Take at the end of Activity 2)

(A) There are 18 figures total: some are squares and all the rest are triangles. The ratio of squares to triangles is of 1:5. Draw the correct number of squares and triangles inside the box below.

(B) Given are regions I and II (shaded). The area of Region 1 is what percentage of the area of region 2?
Meetings Report
(Blue paper)
Dear leader mentor,

Please complete this survey about each of the students at your table. Circle the number that better reflects how you feel. We really value your input. THANK YOU for your thoughtful answers, and for your amazing contribution to Math CEO.

**STUDENT’S FIRST NAME:** ___________  **LAST NAME:** ___________

Compared to his/her peers, how good was this student at solving today’s math activities? 1 (worse)  2  3 (average)  4  5 (a lot better)

How much innate ability or talent in math did this student show today? 1 (not at all)  2  3 (a little)  4  5 (very much)

How much effort did this student put in today’s math activities? 1 (not at all)  2  3 (a little)  4  5 (very much)

How much did this student participate in today’s math activities? 1 (not at all)  2  3 (a little)  4  5 (very much)

How interested was this student in today’s math activities? 1 (not at all)  2  3 (a little)  4  5 (very much)

Any note or comment about this student? ____________________________________________________________________________________

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