

The background is a dark, textured surface with faint, light-colored sketches of various mathematical and scientific concepts. These include a globe in the upper left, a large letter 'V' in the top left, a microscope on the left side, a stack of books at the bottom left, a plus sign, a percentage sign, and a less-than sign in the bottom right, and an open book with handwritten notes at the bottom center.

Ratios and Proportions

What Are They and How to Solve Them

LESSON OBJECTIVE

- Define and represent proportional relationships.

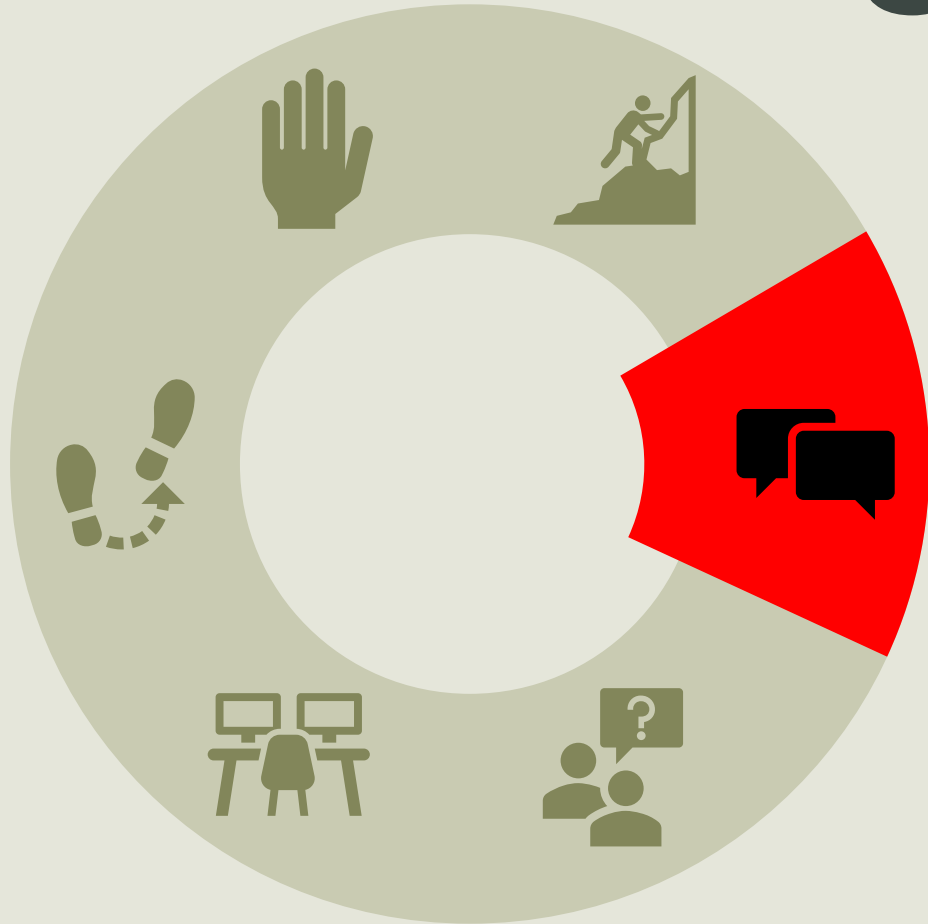
LEARNING GOALS

- I can define proportional relationships.

The background is a soft-focus photograph of a classroom. Several students are visible, with their hands raised in the air, suggesting an interactive learning environment. The lighting is warm and natural, coming from the side. The text 'CHAMPS' is overlaid in the center, with a gold outline and a gradient fill that matches the background's color palette.

CHAMPS

CONVERSATION



0 – No Voice

1 – Whisper

2 – Table Talk

3 – Teacher Voice

4 – Outside Voice

CONVERSATION

0 – No Voice

1 – Whisper

2 – Table Talk

3 – Teacher Voice

4 – Outside Voice



HELP



Raise Hand

Ask 2 Before Me

Ask Partner

Clipboard



HELP

Raise Hand

Ask 2 Before Me

Ask Partner

Clipboard

ACTIVITY

Independent Work

Buddy

Group Work

Whole Group

Stations



ACTIVITY

Independent Work



Buddy

Group Work

Whole Group

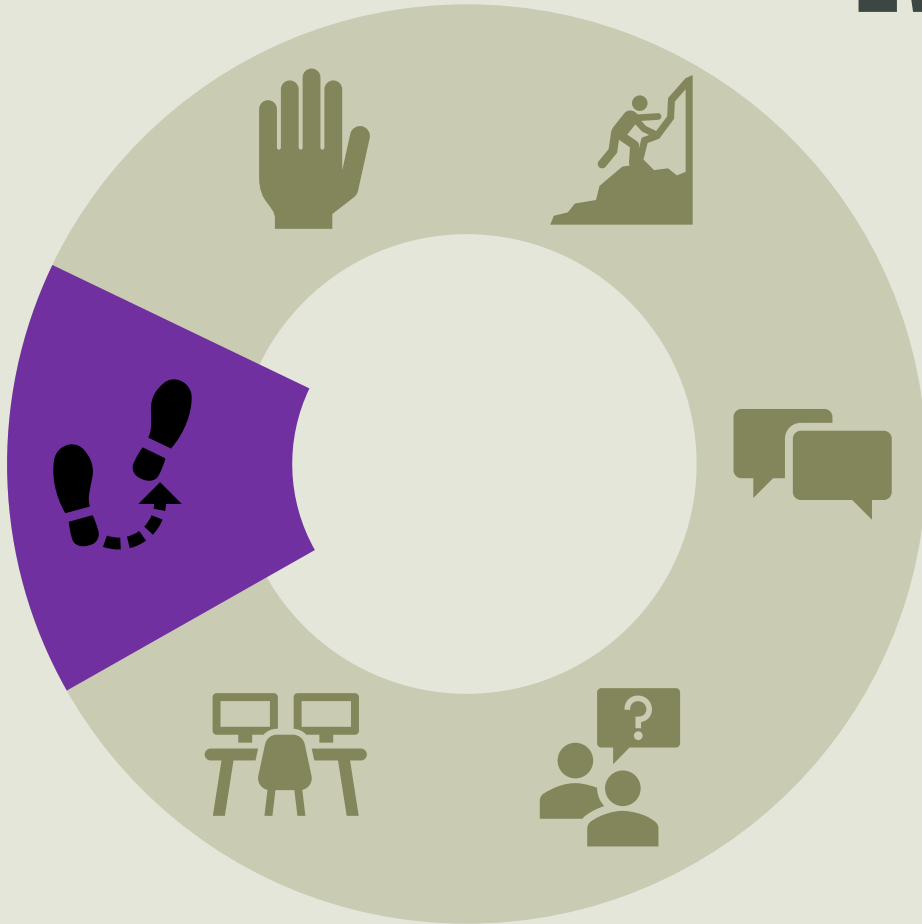
Stations

MOVEMENT

Stay Seated

Move with Permission

Move with a Partner



MOVEMENT

Stay Seated

Move with Permission

Move with a Partner



PARTICIPATION

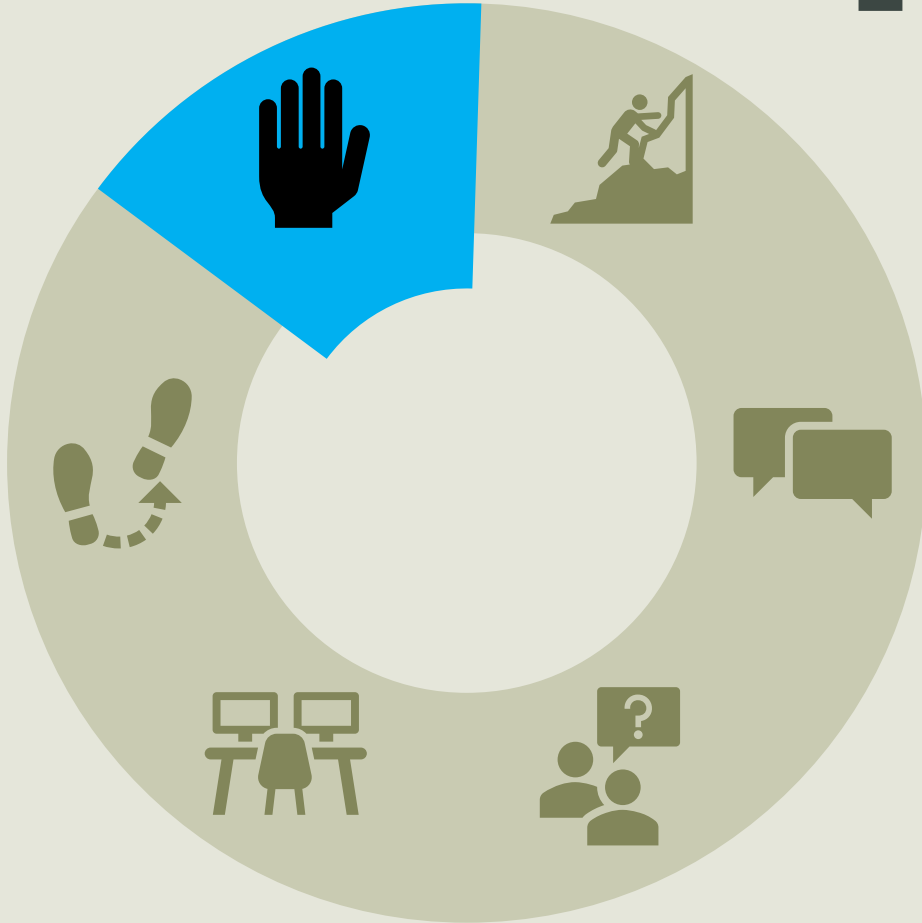
Listen

Full Cooperation

Work as A Team

Work as Directed

Work with Teacher's Help



PARTICIPATION

Listen

Full Cooperation

Work as A Team

Work as Directed

Work with Teacher's Help



SUCCESS

100% Lesson Participation

Follow CHAMPS Rules

Follow Expectations



SUCCESS

100% Lesson Participation

Follow CHAMPS Rules

Follow Expectations



CHAMPS RULES

C
1 – Whisper

H
Raise Hand

A
**Independent
Work**

M
Stay Seated

P
**Full
Cooperation**

S
**Follow
Expectations**

A dark grey background featuring a collage of white, chalk-like sketches of various educational and scientific icons. These include a globe, a microscope, a book, a percentage sign, a ruler, and various geometric shapes like triangles and rectangles.

Ratios and Proportions

What Are They and How to Solve Them

What are Ratios?

Definition

Ratios are mathematical expression that compare two or more quantities, indicating their relative sizes.

Comparative Nature

Ratios can compare similar items, such as types of students, or different categories, such as boys to girls.

Forms of Ratios

Ratios can be expressed in various formats, including colon notation (e.g. 10:6) and fraction form (e.g. $10/6$).

Examples of Ratios

Given Examples

In a class of 16 girls,
10 red-haired girls
and 6 purple-haired
girls.

Possible Ratios

Ratios can be
formed such as red-
haired girls to
purple-haired girls
(10:6) or purple-
haired girls to red-
haired girls (6:10)

Proper & Improper Fractions

Ratios can be
expressed as proper
fractions (less than
1) or improper
fractions (greater
than 1).

What are Proportions?

Definition

A proportion is an equation that states two ratios are equivalent, indicating a balance between them.

Statement of Equality

Proportions are expressed the equality of two ratios, such as the ratio of hamsters to all class pets compared to the ratio of red-haired girls to all girls.

Checking Method

To verify proportions, one can simplify both ratios or apply cross-multiplication to confirm their equality.

The background features a dark, textured collage of white line-art icons. These include a globe on the left, a microscope on the right, a book at the top left, a percent sign and a ruler in the top left corner, and various geometric shapes like triangles and rectangles scattered throughout.

How to Solve Ratios and Proportions

List Relevant Ratios

- Begin by identifying and listing all relevant ratios present in the problem to establish a clear framework for solving.

Cross-Multiplication

- When dealing with proportions, cross multiplication is a powerful technique to find unknown values.

Scaling Relationship

- When scaling ratios, it is essential to maintain the same relationships between quantities to ensure accuracy.

A dark grey background featuring a collage of white line-art sketches of school-related items. On the left, there is a globe, a stack of books, and a pair of scissors. On the right, there is a microscope and a stack of books. In the center, there are various geometric shapes like triangles and rectangles. The text is centered in a white rectangular area.

Word Problems with Ratios and Proportions

Real-Life Uses

- Ratios and proportions are widely applicable in various fields, including cooking, finance, and engineering.

Example Problem

- For instance, if one hamster requires 60g of chow, how much is needed for 5 hamsters?

Method to Solve

- Set up the ratio or proportion based on the problem, then solve for the unknown quantity.

$$1:60 = 5:x$$

$$1 \cdot x = 60 \cdot 5$$

$$**x = 300**$$

Example Ratios

- Consider maintaining a 2:3 ratio of pears to apples in a recipe or project.

Scaling Examples

- If the basket size increases by 5 times, the ratio of pears to apples would scale to 10:15.

Classroom Scenarios

- Explore ratios in a classroom context, such as comparing the number of boys to girls, or chairs to students present.

RATIOS

compare values

