Equations For Model Real-World Problems

Summary

Students will write equations to model real-world situations, and solve those equations

Main Core Tie

Mathematics Grade 6

Strand: EXPRESSIONS AND EQUATIONS (6.EE) Standard 6.EE.6

Additional Core Ties

Mathematics Grade 6

Strand: EXPRESSIONS AND EQUATIONS (6.EE) Standard 6.EE.5

Materials

- Transparency and student copies of " Searching For Mr. E. Qual"
- Smart Pal Communicators, markers and erasers, or Team Boards, markers and erasers
- 3x5 cards with equation written on each
- Transparency, marker and wipe off for each team, or use Smart Pal (for Team Challenge)

Background for Teachers

Enduring Understanding (Big Ideas):
Equations
Essential Questions:

- How can we use equations to model real-world situations?

Skill Focus:
Writing and solving equations
Vocabulary Focus:
model
Ways to Gain/Maintain Attention (Primacy):
Smart Pal Communicators, group discussion, game

Instructional Procedures

Starter:

- Find the value for the expression if m = -3, -2m + 7
- Solve this equation, 3y -- 2.9 = 10
- Write an algebraic expression to model this verbal expression: Joe has three times as much money as he had last week. Let m represent Joe's money last week.

Lesson Segment 1: Accessing background knowledge. What words mean indicate two expressions are equivalent?
In December, we practiced writing algebraic expressions for words. We learned which words indicate for us to add, subtract, multiply and divide, and how to use a variable for an unknown or undetermined quantity.
Team Boards or Smart Pal Sleeves
Say any operation (+, -, x, Ã·) and ask students to write one word that indicates that operation. Have them write large enough to show others. Ask students to hold up their boards or sleeves and allow others to see their word. Repeat for each operation. Today, we will be extending that to writing equations to represent words or real-world situations. Since an equation must have two equivalent expressions, it will always contain and = sign. There are words that indicate there should be an =

sign. We find situations and words that suggest equivalency every day in our world.
Tell students they will be detective partners. Place a transparency of "Searching For Mr. E. Qual" on the overhead and give students one for their Smart Pal Communicators. Partners work together to find the word or phrase in each item that would indicate some expression must be equal to another. Give them a minute to look at each, then underline and discuss the words on the overhead.

- is
- has
- is the same
- are equal
- results in
- have
- will be

Lesson Segment 2: How can equations model real-world situations?
Q. How would you go about finding the answer to question 1 (2,3 …) of Finding Mr. E. Qual? Use Think-Team-Share where students think, then share ideas with their team, then teacher asks for a team member to tell what the team was thinking. Ask if any team used a different approach.
"There are probably several ways to approach finding the answer. One way we can find an answer is to use an equation to model the situation." Show the students your equations discussing the 4-step procedure for writing an equation for each situation on the finding Mr. E. Qual paper as explained below. Students should write and solve each equation on their own assignment paper
Have students write these on a four flap foldable, or write notes in their journal to refer to later.
Procedure for writing an equation from a situation
Step 1. First ask, "What does the question want us to find? We can use a variable to represent what we need to find -the question?
Step 2. Then ask, What operation, + -, x, Ã·, do the words in the problem suggest may be done with the variable? Student may refer to the journal page from Dec, lesson 2.
Step 3. Then ask, "What are the facts?" (numbers or other symbols that need to be included in the problem?)
Step 4. Last ask, "What order should all the symbols (numbers, variable, and operation sign) be placed in?
Possible Equations for Finding Mr. E. Qual

- What number is described? 5n = 40
- How much money does Daniel have? D + 4 = 10
- How long did Marissa work? t = 3
- How much does each book weigh? 2b = 5
- What is the number described in # 5? X/8 = 4
- How many brothers does Emma have? 2e = 8
- How many years until Sierra is16? 12 + y = 16

Give students an opportunity to practice writing equations and situations using the "Writing Situations for One-Variable Equations and Equations for Situations Team Challenge Game (attached)
Assign any additional practice as needed

Assessment Plan

observation, performance tasks, questioning

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