Math Kangaroo

Level 5-6

Algebraic Thinking

Warm Up

Instruction

$a \times b$

Algebraic Thinking

Wrap Up

Bonus Slides

Algebraic Thinking: Warm-Up

(MK 2018 #5)

Alice subtracted two 2-digit numbers. Then she painted two cells. What is the sum of the two digits in the painted cells?

Algebraic Thinking

- ability to recognize patterns, represent relationships, make generalizations, and analyze how things change

- problem solving skills, representation skills, and quantitative reasoning skills

Algebraic Thinking

Think-of-a-Number Fun Trick

- Think of a number
- Add 3
- Double that
- Subtract 4
- Cut that in half
- Subtract your original number
- Your result is 1!

Algebraic Thinking

Think-of-a-Number Fun Trick

- Think of a number.
- Add 3.
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- Your result is 1!

Words for each step ———	Pictures of the results
Think of a number.	
Add 3.	
Double that.	
Subtract 4.	
Cut that in half.	
Subtract your original number.	
Now it is easy to see...	The result is 1!

Math Kangaroo
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4-Step Problem Solving Strategy

A problem is a question that demands much thought and resourcefulness before the right approach is found. These steps can help you solve many types of problems

1. Understand the problem. Determine what it is asking.

2. Plan how to solve the problem. How can you tackle this problem? What do you need to do to solve it?

3. Carry out your plan. Carefully complete your calculations or organize your thoughts and steps.

4. Look back to check and reflect. Does this answer make sense? Did you answer the correct question?

(MK 2009 #7)

1. A bridge is built across a river. The river is 120 meters wide. One quarter of the bridge is over land on the left bank and one quarter of the bridge is over land on the right bank of the river. How long is the bridge?

(MK 2004 #8)

2. Three members of the rabbit family eat 73 carrots altogether during break. The father ate five carrots more than the mother. Their son ate 12 carrots. How many carrots did the mother eat that week?

(MK 2004 #14)

3. The weight of 3 apples and 2 oranges is 255 g. The weight of 2 apples and 3 oranges is 285 g. Each apple weighs the same and each orange weighs the same. What is the combined weight of 1 apple and 1 orange?

(MK 2020 #16)

4. A father kangaroo lives with his children. They decide on all matters by taking a vote, and each member of the family gets as many votes as his or her age. The father is 36 years old and the children are 13, 6, and 4 years old, so right now the father wins. How many years will it take for the children to have majority of the votes if they all vote the same way?

(MK 1999 #18)

5. One bowl contained 26 liters of water and another bowl contained 7 liters of water. The same amount of water was added to each bowl, and now the second bowl contains 3 times less water than the first bowl. How many liters of water were added to each bowl?

(MK 2004 #29)

6. During a competition in the Kangaroo Summer Camp in Zakopane, students were given 10 problems to solve. For each correct answer a student was given 5 points, and for each incorrect answer a student lost 3 points. Everybody answered all the problems. Matthew got 34 points, Philip got 10 points, and John got 2 points. How may problems did they answer correctly altogether?

(MK 2008 #27)

7. A fairy has 6 bottles. Their volumes are 16 oz, 18 oz, 22 oz, 24 oz, 32 oz, and 34 oz. Some are filled with orange juice, some are filled with cherry juice, and one is empty. There is twice as much orange juice as cherry juice. What is the volume of the empty bottle?

Wrap Up

Algebraic Thinking

- ability to recognize patterns, represent relationships, make generalizations, and analyze how things change
- problem solving skills, representation skills, and quantitative reasoning skills

When solving problems involving algebraic thinking:

- read the problems more than once
- identify vocabulary used
- recognize the types of skills required
- solve and check your answer