

Reasoning and Problem Solving

Step 6: Word Problems

National Curriculum Objectives:

Mathematics Year 6: (6A1) [Express missing number problems algebraically](#)

Mathematics Year 6: (6A2) [Use simple formulae](#)

Mathematics Year 6: (6A3) [Generate and describe linear number sequences](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Use cards to create an algebraic equation and then create a matching word problem and concrete representation. Five cards provided, including addition and subtraction.

Expected Use cards to create an algebraic equation and then create a matching word problem and concrete representation. Five cards provided, including multiplication and division.

Greater Depth Use cards to create an algebraic equation and then create a matching word problem and concrete representation. Seven cards provided, including all four operations and two variables.

Questions 2, 5 and 8 (Reasoning)

Developing Find and explain which representation is the odd one out. Problems include addition and subtraction, and multiplication by 2.

Expected Find and explain which representation is the odd one out. Problems include all 4 operations and whole numbers, with some decimals and fractions.

Greater Depth Find and explain which representation is the odd one out. Problems include all 4 operations and whole, decimal and negative numbers and fractions.

Questions 3, 6 and 9 (Reasoning)

Developing Identify and explain which word problem does not match a given equation. Problems include addition and subtraction, and multiplication by 2.

Expected Identify and explain which word problem does not match a given equation. Problems include all 4 operations and whole numbers, with some decimals and fractions.

Greater Depth Identify and explain which word problem does not match a given equation where there are 2 unknown values. Problems include all 4 operations and whole, decimal and negative numbers and fractions.

More [Year 6 Algebra](#) resources.

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Word Problems

1a. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

Word Problems

1b. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

2a. Which is the odd one out?

A. I think of a number. I multiply it by 2. My answer is 8.



C. $n - 1 = 2$

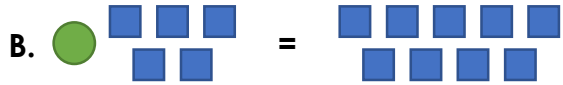


Explain your answer.

R

2b. Which is the odd one out?

A. I think of a number. I subtract 4 from it. My answer is 3.



C. $12 = n + 5$



Explain your answer.

R

3a. Chris and Elle are creating word problems based on the equation below.

$$5 + n = 13$$



Chris

I had 13 people at my party. 5 extra people came. How many people were there?

I had 5 sweets. My sister gave me some more. Now I have 13.



Elle

Who is incorrect? Explain your answer.



R

3b. Toya and Riley are creating word problems based on the equation below.

$$2n = 24$$



Toya

I think of a number. I multiply it by 2 to make 24.

I think of two numbers. One is 2 and the other is 4.



Riley

Who is incorrect? Explain your answer.



R

Word Problems

Word Problems

4a. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

4b. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

5a. Which is the odd one out?

A. I think of a number. I divide it by 3. I add 8. My answer is 12.



C. $\frac{1}{4}n - 2 = 1$

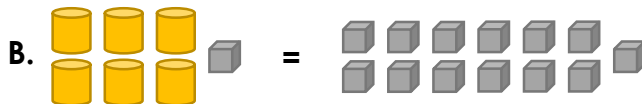


Explain your answer.

R

5b. Which is the odd one out?

A. I think of a number. I multiply it by 10. I subtract 3. My answer is 22.



C. $5n + 6 = 16$



Explain your answer.

R

6a. Eva and Jackson are creating word problems based on the equation below.

$$8 = 4r \div 2$$



Eva

I think of a number. I multiply it by 4 and divide by 2. My answer is 8.

I think of a number. I divide it by 4 and divide it again by 2. My answer is 8.



Jackson

Who is incorrect? Explain your answer.



R

6b. Vansh and Lisa are creating word problems based on the equation below.

$$49 = t - 21$$



Vansh

There is a group of people. 21 people leave the group. There are 49 people remaining.

There are 49 people. 21 people leave and now there are some people left.



Lisa

Who is incorrect? Explain your answer.



R

Word Problems

Word Problems

7a. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

7b. Use some of the cards to create an algebraic equation.



Draw an image using concrete materials and write a word problem to match the equation created.



PS

8a. Which is the odd one out?

A. I think of a number. I multiply it by 5. I subtract 11. My answer is 9.



C. $\frac{1}{4}n + 7 = 8$

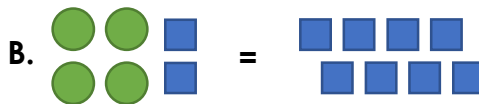


Explain your answer.

R

8b. Which is the odd one out?

A. I think of a number. I multiply it by 2. I add 0.5. My answer is 3.5.



C. $9n - 9.3 = -0.3$



Explain your answer.

R

9a. Sophia and Otis are creating word problems based on the equation below.

$$2h - 8j = -8.5$$



I think of a number and multiply it by 2. I multiply another number by 8. I subtract the first answer from the second answer to get -8.5.

I think of a number and multiply it by 2. I multiply another number by 8. I subtract the second answer from the first answer to get -8.5.



Who is incorrect? Explain your answer.



R

9b. Tom and Jaya are creating word problems based on the equation below.

$$43.4 = 3b + 4c$$



I multiply a number by 3. I add 4 to it. My answer is 43.4.

I think of a number and multiply it by 3. I think of another number and multiply it by 4. When I add them together, my answer is 43.4.



Who is incorrect? Explain your answer.



R

Reasoning and Problem Solving Word Problems

Developing

- 1a. Various possible answers, for example:
 $2n + 5 = 17$. The image and word problem must match the equation.
- 2a. Option C because the unknown number is 3. In the other options it is 4.
- 3a. Chris. His problem adds 5 to 13 to find n , rather than 5 to n to get 13.

Expected

- 4a. Various possible answers, for example:
 $6n \times 3 = 36$. The image and word problem must match the equation.
- 5a. Option B because the unknown number is 3. In the other options it is 12.
- 6a. Jackson. He has divided r by 4, instead of multiplying.

Greater Depth

- 7a. Various possible answers, for example:
 $3n + 5m = 21$. The image and word problem must match the equation.
- 8a. Option B, because the unknown number is 4.5. In the other options it is 4.
- 9a. Sophia. In her problem she subtracts the first answer from the second, when she should subtract the second from the first.

Reasoning and Problem Solving Word Problems

Developing

- 1b. Various possible answers, for example:
 $2n - 4 = 8$. The image and word problem must match the equation.
- 2b. Option B, because the unknown number is 4. In the other options it is 7.
- 3b. Riley. His problem does not use multiplication to make 24.

Expected

- 4b. Various possible answers, for example:
 $4n \div 2 = 12$. The image and word problem must match the equation.
- 5b. Option A, because the unknown number is 2.5. In the other options it is 2.
- 6b. Lisa. She has subtracted 21 from 49, instead of t .

Greater Depth

- 7b. Various possible answers, for example:
 $2m \div 4n = 12$. The image and word problem must match the equation.
- 8b. Option C, because the unknown number is 1. In the other options it is 1.5.
- 9b. Tom. He has not multiplied c by 4, so he has added the wrong number.