



TABE Math-E

PAXEN

Unit-3 Multiply and Divide Whole Numbers

Lesson 22 Multi-Step Problems

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Math-E - Lesson 22 – Multi-Step Problems

Lesson 22

Multi-Step Word Problems

3.OA.8 – Medium, 3.OA.3 – Low

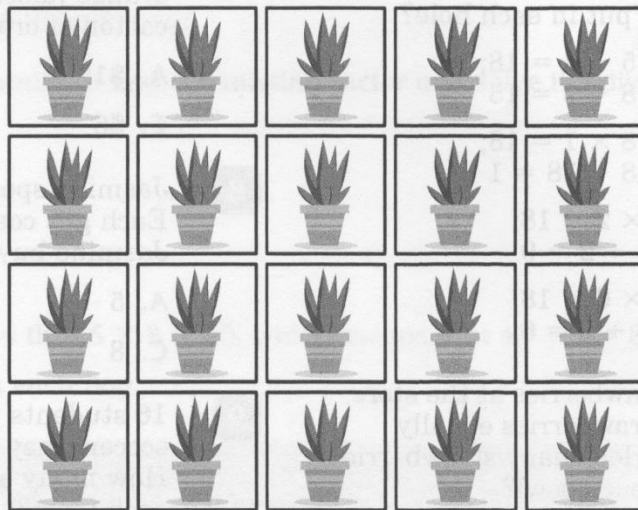
Some word problems require more than one operation to find a solution. It is important to understand what you know about the problem. You also must understand what the question asks so that you can decide what steps to take to solve the problem. You can use a question mark or the letter x in your equation to represent an unknown quantity and organize your thinking.

Example Frank buys a tray of plants for his garden. The tray has 4 rows of 5 plants. Frank gives some plants to David. He has 17 plants left. How many plants does Frank give David?

1) Determine what information you know and what the question asks.

The question asks how many plants Frank gives to David. What is known is how to find how many plants Frank buys, 4 rows of 5 plants.

2) First, find the number of plants Frank buys. You can use a model to represent the plants Frank buys:



You can use multiplication to determine how many plants are in the array.

$$4 \times 5 = 20. \text{ Frank buys 20 plants.}$$

3) Now, use how many plants Frank buys to find out how many he gives to David. Write an equation using a letter to represent the unknown amount in the equation.

Frank has 20 plants. He gives some to David. He has 17 plants left.

$$20 - x = 17$$

Consider using related addition facts to solve the problem.

$$17 + x = 20$$

Since $17 + 3 = 20$, $x = 3$.

Frank gives 3 plants to David.

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Test Example

1. Alice finds 18 pencils in one classroom and 14 pencils in another. She wants to split the pencils evenly into 4 boxes. How many pencils should go in each box?

- A. 8 pencils
B. 10 pencils
C. 28 pencils
D. 32 pencils

1. A $18 + 14 = 32$. Alice finds a total of 32 pencils. To put them evenly into 4 groups, she divides $32 \div 4 = ?$. $4 \times 8 = 32$. There should be 8 pencils in each box.

Hint

Think about the steps that you will need to solve the problem. What do you need to do first?

Practice

Read each question. Select the correct answer.

1. Ariel bought a piece of fabric that was 24 inches long. She used some of the fabric to patch a hole in her jeans. She cut the remaining fabric into 3 pieces, each 7 inches long. How long was the fabric she used to patch her jeans?

- A. 21 inches
B. 17 inches
C. 14 inches
D. 3 inches

2. John has 9 red apples and 5 green apples. He divides the apples equally between 2 bags. How many apples are in each bag?

- A. 7
B. 14
C. 16
D. 47

3. Aimee buys 16 ounces of roast beef and 8 ounces of turkey at the deli. If Aimee makes 4 equally sized sandwiches using all of the deli meat, how many ounces of deli meat are on each sandwich?

- A. 31 ounces
B. 24 ounces
C. 8 ounces
D. 6 ounces

4. Angelo buys 4 cases of orange juice. Each case contains 6 cartons of orange juice. Angelo also buys 4 cartons of apple juice. How many cartons of juice does Angelo buy?

- A. 48
B. 28
C. 20
D. 14

5. Martin collects 72 pounds of scrap metal. He gives 9 pounds of scrap metal to Dmitri. Martin divides the rest of the metal into 9 equal piles. How many pounds of metal are in each pile?

- A. 9
B. 8
C. 7
D. 6

6. Susan buys 3 cartons of paper. Each carton contains 9 reams of paper. Susan uses 12 reams of paper. How many reams of paper does Susan have now?

- A. 15
B. 24
C. 27
D. 39

7. Yan works for a moving company. One day he packs 6 boxes every hour for 6 hours. Then he works one more hour. Yan packs a total of 49 boxes that day. How many boxes does he pack in the last hour?

- A. 7
B. 9
C. 12
D. 13

8. Kate earns wages at the rate of \$10 per hour. On Friday she worked 8 hours. She received \$18 in tips. How much money did Kate earn on Friday?

- A. \$18
B. \$36
C. \$80
D. \$98

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Lesson 22

Multi-Step Word Problems

(3.OA.8, 3.OA.3)

- 1. D.** Ariel has 3×7 , or 21 inches of fabric after she cuts some off to patch her jeans; $24 - 21 = 3$.
- 2. A.** John has $9 + 5$, or 14 apples. He divides them equally between 2 bags; $14 \div 2 = 7$.
- 3. D.** Aimee makes 4 sandwiches using $16 + 8$, or 24 ounces of deli meat; $24 \div 4 = 6$. Each sandwich has 6 ounces of deli meat.
- 4. B.** Angelo buys 4×6 , or 24 cartons of orange juice; $24 + 4 = 28$. He buys 28 total cartons of juice.
- 5. C.** Martin has $72 - 9$, or 63 pounds of metal to divide into 9 piles; $63 \div 9 = 7$. 7 pounds of metal are in each pile.
- 6. A.** Susan buys 3×9 , or 27 reams of paper; $27 - 12 = 15$. She has 15 reams of paper now.
- 7. D.** Yan packs 6×6 , or 36, boxes in the first 6 hours; $49 - 36 = 13$. He packs 13 boxes in the last hour.
- 8. D.** Kate earned 8×10 , or \$80 in wages; $80 + 18 = 98$. She earned \$98 on Friday.

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Practice 22

Multi-Step Word Problems

3.OA.8 – Medium, 3.OA.3 – Low

- 1 Lee makes 12 pumpkin muffins in the morning and 24 more muffins in the afternoon. He wants to split the muffins evenly among four containers. How many muffins can Lee put in each container?
- A. 36 muffins
B. 12 muffins
C. 9 muffins
D. 6 muffins
- 2 Kim has a dog-walking business and charges \$10 for each dog that she walks. On Saturday, Kim walks three dogs. On Sunday, she walks four dogs. How much money does Kim make over the weekend?
- A. \$80
B. \$70
C. \$40
D. \$30
- 3 Amir has two boxes of pens. Each box contains 14 pens. Amir lends seven pens to his coworkers. How many pens does Amir have left?
- Which two expressions can be used to solve the problem?
- A. $2 + 14 + 7$
B. $14 + 14 - 7$
C. $(2 \times 14) - 7$
D. $(2 \times 14) + 7$
E. $(2 \times 7) + (2 \times 7)$
F. $(2 \times 7) + (2 \times 7) + 7$
- 4 Keisha buys 36 yards of yarn. She uses some to crochet a lanyard. She cuts the rest of the yarn into two pieces that are each 12 yards long. How much yarn does Keisha use to make the lanyard?
- A. 12 yd
B. 22 yd
C. 24 yd
D. 34 yd
- 5 Quinn earns \$14 per hour. Last week, he worked 10 hours. On his paystub, Quinn noticed that \$21 was withheld. How much money does Quinn earn after withholdings?
- A. \$35
B. \$45
C. \$119
D. \$140
- 6 Vanida buys three bunches of bananas. Each bunch has six bananas. She also buys five apples. How many pieces of fruit does Vanida buy?
- A. 15 pieces of fruit
B. 18 pieces of fruit
C. 23 pieces of fruit
D. 33 pieces of fruit
- 7 Scott goes apple picking and picks 30 red apples and 15 green apples. He wants to sort all the apples evenly into three crates. How many apples does Scott put in each crate?
- A. 12 apples
B. 15 apples
C. 42 apples
D. 45 apples
- 8 Denali plants herbs in his garden in three rows of seven. He plants four more herbs in clay pots. How many herbs does Denali plant in all?
- A. 14 herbs
B. 25 herbs
C. 28 herbs
D. 31 herbs
- 9 For the staff picnic, Kiaan buys three cases of water bottles. Each case has 12 water bottles. He also buys six bottles of soda. How many drinks does Kiaan buy?
- A. 42 drinks
B. 36 drinks
C. 21 drinks
D. 18 drinks

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- 10** José runs four laps around a track. He runs each lap in three minutes. Then he walks one lap in six minutes. How long does José spend on the track?
- A. 15 min
B. 18 min
C. 28 min
D. 30 min
- 11** Prisha plays four 12-minute quarters in her basketball game. The game goes into overtime, and she plays an additional 5 minutes. How many minutes does Prisha play in the basketball game?
- A. 17 min
B. 43 min
C. 48 min
D. 53 min
- 12** On Monday, Simon makes 30 prosthetics. On Tuesday, he makes half as many prosthetics. How many prosthetics does Simon make in all?
- A. 45 prosthetics
B. 30 prosthetics
C. 25 prosthetics
D. 15 prosthetics
- 13** Jimena has 24 students in her class. She grades two essays from each student. She also grades six group projects. How many assignments does Jimena grade in all?
- A. 32 assignments
B. 42 assignments
C. 54 assignments
D. 60 assignments
- 14** Coach Fernandez orders three pizzas for the 12 athletes on his team to split evenly. Each pizza has eight slices. How many slices of pizza does each athlete get?
- A. 2 slices
B. 3 slices
C. 4 slices
D. 8 slices
- 15** Shayna drives 60 miles per hour on the highway. She drives for two hours before stopping for gas. Shayna drives another two hours after she gets gas. How many miles does Shayna drive?
- A. 100 mi B. 120 mi
C. 180 mi D. 240 mi
- 16** Ofelia donates half of her earnings from the craft fair to a local charity. She makes \$46 on Saturday and \$54 on Sunday. How much does Ofelia donate to charity?
- A. \$50 B. \$54
C. \$67 D. \$100
- 17** Ricky is working on a 250-piece puzzle. He successfully places 88 pieces before lunch and 77 pieces after lunch. How many puzzle pieces does Ricky have left to place?
- A. 165 pieces
B. 77 pieces
C. 85 pieces
D. 88 pieces
- 18** Keshon earns wages of \$9 per hour. On Saturday, he works for four hours and receives \$20 in tips. How much does Keshon earn on Saturday?
- A. \$18 B. \$36
C. \$56 D. \$65
- 19** DeShawn sells 17 jars of honey and 13 jars of jam at the farmer's market. Each jar sells for \$6. How much money does DeShawn make at the farmer's market?
- A. \$37 B. \$102
C. \$120 D. \$180
- 20** Isla spends 45 minutes decorating her office by hanging new shelves, artwork, and curtains. She spends 14 minutes hanging shelves and 11 minutes hanging artwork. How many minutes does Isla spend hanging curtains?
- A. 14 min
B. 20 min
C. 25 min
D. 70 min

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Practice 22 Multi-Step Word Problems

pp. 48–49

3.OA.8, 3.OA.3

1. C. Lee makes $12 + 24$, or 36 muffins: $36 \div 4 = 9$. He can put 9 muffins in each container.
2. B. Kim walks $3 + 4$, or 7 dogs: $7 \times 10 = 70$. Kim makes \$70.
3. B, C. Amir could use repeated addition and then subtraction: $14 + 14 - 7 = 21$. Amir could also use multiplication and then subtraction: $(2 \times 14) - 7 = 21$. Amir has 21 pens left.
4. A. Keisha has 2×12 , or 24 yards of yarn after using some. $36 - 24 = 12$. Keisha uses 12 yards of yarn to make the lanyard.
5. C. Quinn earns 14×10 , or \$140: $140 - 21 = 119$. Quinn earns \$119 after withholdings.
6. C. Vanida buys 3×6 , or 18 bananas: $18 + 5 = 23$. Vanida buys 23 pieces of fruit.
7. B. Scott picks $30 + 15$, or 45 apples: $45 \div 3 = 15$. Scott puts 15 apples in each crate.
8. B. Denali plants 3×7 , or 21 herbs in his garden: $21 + 4 = 25$. Denali plants 25 herbs.
9. A. Kiaan buys 3×12 , or 36 water bottles: $36 + 6 = 42$. Kiaan buys 42 drinks.
10. B. José runs for 4×3 , or 12 minutes: $12 + 6 = 18$. José spends 18 minutes on the track.
11. D. Prisha plays 4×12 , or 48 minutes before overtime: $48 + 5 = 53$. Prisha plays 53 minutes.
12. A. Simon makes $30 \div 2$, or 15 prosthetics on Tuesday: $30 + 15 = 45$. Simon makes 45 prosthetics in all.
13. C. Jimena grades 24×2 , or 48 essays: $48 + 6 = 54$. Jimena grades 54 assignments in all.
14. A. Coach Fernandez orders 3×8 , or 24 slices of pizza: $24 \div 12 = 2$. Each athlete gets 2 slices of pizza.
15. D. Shayna drives 60×2 , or 120 miles before stopping for gas: $120 + 120 = 240$. Shayna drives 240 miles.
16. A. Ofelia makes $46 + 54$, or \$100 at the craft fair: $100 \div 2 = 50$. Ofelia donates \$50 to charity.
17. C. Ricky puts together $88 + 77$, or 165 pieces: $250 - 165 = 85$. Ricky has 85 pieces left.
18. C. Keshon earns 9×4 , or \$36 in wages: $36 + 20 = 56$. Keshon earns \$56 on Saturday.
19. D. DeShawn sells $17 + 13$, or 30 jars at the farmer's market: $30 \times 6 = 180$. DeShawn makes \$180.
20. B. Isla spends $14 + 11$, or 25 minutes hanging shelves and artwork: $45 - 25 = 20$. Isla spends 20 minutes hanging curtains.