

Solutions for equations and inequalities

Name: _____

Date: _____

1. Look at the table.

z	?
3	18
4	24
0	0
9	54
8	48

Which expression should go at the top of the second column?

- A. $(z + 6) \times 2$ B. $(z + 3) \times 3$
 C. $z \times 6$ D. $z + 15$

2. Look at the table.

f	?
6	24
7	28
3	12
2	8

Which expression should go at the top of the second column?

- A. $(f + 3) \times 2$ B. $f + 6$
 C. $(f + 2) \times 3$ D. $f \times 4$

3. Which problem could *best* be solved using this equation: $x + 17 = 60$?

- A. Bob has 60 baseball cards. He buys 17 more. How many cards does he have now?
 B. Latoya found 60 seashells at the beach, but broke 17 of them. How many shells does she have left?
 C. Kalief won 17 tokens at a video arcade. He now has 60 tokens altogether. How many tokens did he originally have?
 D. Gayle rode 60 miles in a crosscountry bike race. She rode 17 miles in the mountains. How many miles of the race were not in the mountains?

4. Which problem could *best* be solved using this equation: $x + 23 = 55$?

- A. Wayne had 55 action figures, but misplaced 23 of them. How many action figures does he have left?
 B. Imir found 23 pennies in the sofa. He now has 55 pennies. How many pennies did he originally have?
 C. Raquelle has 55 books due at the library. She checks out 23 more. How many books does she have checked out now?
 D. Phyllis bakes 55 cookies, but ate 23 of them. How many cookies does she have left?

5. Which situation is described by the equation:
 $10 + 15 - 3 = 8 + x$?

- A. Allen has 15 peaches and 10 apples. Conrad has 8 apples. If Allen eats 3 pieces of fruit and Conrad eats x , then they will have the same amount. Find x .
- B. Andy earned 10 dollars before lunch and 15 dollars after. He spent 3 dollars for his meal. Juan earned 8 dollars before lunch and he didn't spend any of it on his meal. How much money x does Juan have to earn after lunch to end up with the same amount as Andy?
- C. A bamboo shoot grew 10 inches the first week and 15 inches the second. The third week it grew 3 inches less than it did the first week. A corn plant grew 8 inches the first week and didn't grow at all the second week. How much, x , does the corn have to grow the third week to be as tall as the bambo?
- D. A fluid was heated 10 degrees, then cooled 15 degrees, then heated 3 degrees. A second fluid was heated 8 degrees from the same starting temperature. How many degrees, x , does the second fluid have to be heated to reach the same temperature as the first?

6. Which situation is described by the equation:
 $10 - 15 + 3 = 8 + x$?

- A. Allen has 15 peaches and 10 apples. Conrad has 8 apples. If Allen eats 3 pieces of fruit and Conrad eats x , then they will have the same amount. Find x .
- B. Andy earned 10 dollars before lunch and 15 dollars after. He spent 3 dollars for his meal. Juan earned 8 dollars before lunch and he didn't spend any of it on his meal. How much money x does Juan have to earn after lunch to end up with the same amount as Andy?
- C. A bamboo shoot grew 10 inches the first week and 15 inches the second. The third week it grew 3 inches less than it did the first week. A corn plant grew 8 inches the first week and didn't grow at all the second week. How much, x , does the corn have to grow the third week to be as tall as the bambo?
- D. A fluid was heated 10 degrees, then cooled 15 degrees, then heated 3 degrees. A second fluid was heated 8 degrees from the same starting temperature. How many degrees, x , does the second fluid have to be heated to reach the same temperature as the first?

7. Kobi measured two drink cups and found:

- the height of a supersize cup is 20 centimeters
- the height of a regular cup is 14.8 centimeters

Kobi used this equation to find the difference in height between the supersize cup and the regular cup:

$$x = 20 - 14.8$$

Which of the following problems could be solved with the same equation?

- A. Mr. Abrams drove his car 20 miles on Saturday and 14.8 miles on Sunday. How many miles did he drive during the weekend?
- B. The perimeter of a rectangle is 20 inches and the length is 5.2 inches. What is the width?
- C. Jeff bought 20 yards of rope. He used 14.8 yards for a clothes line. How much rope does he have left over?
- D. Dan's driveway is 14.8 feet wide by 20 feet long. What is the area of the driveway?

8. Here are two facts about Jaime:

- When Jaime was born, he weighed 3.50 kilograms.
- Jaime is now 10 years old and weighs 36.50 kilograms.

The following equation can be used to determine how much weight Jaime gained since birth:

$$x = 36.50 - 3.50$$

Which of the following problems could be solved with the same equation?

- A. Adam shopped online for a gift. He spent \$36.50 plus \$3.50 for overnight shipping. How much did he spend altogether?
- B. Annabelle has \$36.50 in her piggy bank. Betty has only \$3.50 in her piggy bank. How much more money does Annabelle have than Betty?
- C. Bernard ate at a restaurant. The bill was \$36.50. He left a \$3.50 tip. What percent of the bill was the tip?
- D. Amanda paid for some clothes with two \$20 bills and got \$3.50 in change. What did the clothes cost?

9. Which problem is solved with the equation?

$$5x = 20$$

- A. A triangle has the perimeter of 20. Two of the sides measure 5 units long. How long is the third?
- B. A rectangle has an area of 20 square units. If its width measures 5 units, what is its length?
- C. A circle has a radius of 5. What is its area?
- D. A cyclist wants to ride her bike 20 miles a day for 5 days. How far will she travel?

10. Which problem is solved with the equation?

$$4x = 28$$

- A. A shed has an area of 28 square feet. If its width measures 4 units, what is its length?
- B. A hula hoop has a radius of 4. What is its area?
- C. Bertha plans to run 28 miles a day for 4 days. How far does she plan to run?
- D. A librarian has 28 books to hand out. She hands out 4 books each to the first two children. How many books does the third child receive?

11. Which problem situation could this equation represent?

$$x = 2(3.50) + \frac{1}{2}(3.50)$$

- A. What is the price of a two-and-a-half gallons of paint, if one gallon costs \$3.50?
- B. What is the cost of 2 pairs of socks, if each pair costs \$3.50 and the sales tax is 5%?
- C. What does a half-jar of peanut butter cost if a full jar costs \$3.50?
- D. What is the volume of a cylinder with a radius of 3.50 and a height of 1.25?

12. Which problem situation could this equation represent?

$$x = (7.50) + \frac{1}{2}(7.50)$$

- A. What is the cost of 2 pairs of slacks, if each pair costs \$7.50 and the sales tax is 5%?
- B. What does a half-jar of sunflower seed oil cost if a full jar costs \$7.50?
- C. What is the price of 2 sets of CD if one set costs \$7.50 and the second set costs half as much?
- D. What is the volume of a cylinder with a radius of 7.50 and a height of 7.50?

13. Jamilia has 49 jelly beans in a bag. She wants to divide them equally among 7 friends. She used this number sentence to find out how many jelly beans each friend should get:

$$49 \div 7 = j$$

Which of these problems can be solved in a similar way?

- A. A CD rack is designed to hold 108 disks on 6 shelves. How many disks go on a shelf?
- B. There are 6 cartons of eggs. Each carton contains 12 eggs. How many eggs in all?
- C. 8 red pencils and 9 yellow pencils are put into a basket. How many pencils are there in all?
- D. A store has 9 boxes of tissue. A customer buys 1 box of tissue. How many boxes of tissue are left?

14. Rocco put 3 baskets of apples on his kitchen table. There are 15 apples in each basket. Rocco used this number sentence to find out how many apples there are altogether:

$$3 \times 15 = b$$

Which of these problems can be solved in a similar way?

- A. There are 27 pencils. There are 3 bins. If the pencils are divided equally, how many go in each bin?
- B. A classroom has 5 rows of desks. There are 6 desks in each row. What is the total number of desks?
- C. A carpenter pounds 20 nails in 3 minutes. At that rate, how many nails would he pound in 15 minutes?
- D. There are 24 peanuts in a bag. A girl takes out 15 peanuts. How many peanuts are left?

15. Choose the situation that is modeled by the equation.

$$y = 3x$$

- A. What is the perimeter, y , of a circle with a radius of x ?
- B. What is the cost, y , of 3 items when sales tax is 3%?
- C. What is the height, y , of a rectangle with sides of x and 3?
- D. What is the amount of snowfall, y , in x hours, when it snows 3 inches per hour?

16. Choose the situation that is modeled by the equation.

$$y = \frac{x}{3}$$

- A. What is the cost, y , of 3 items when sales tax is 3%?
- B. What is the height, y , of a rectangle with sides of x and 3?
- C. What is the amount of snowfall, y , in x hours, when it snows 3 inches per hour?
- D. What is the length, y , of a rod x that is divided into thirds?

17. Which problem is solved with the equation

$$\frac{P}{4} = 12?$$

- A. If one-fourth of your paycheck is \$12, how much did you get paid?
- B. If you get paid \$12, how much is $\frac{1}{4}$ of your paycheck?
- C. If you get paid 4 times a month, how much will you get in a year?
- D. If you get paid \$12 a month, how much will you earn in a year?

18. Which problem matches this equation?

$$180 \div 6 = x$$

- A. Mary has 3 hours to write 6 newspaper articles for her school paper. About how many minutes can she spend writing each article?
- B. Six toddlers weigh a total of 180 pounds. How much does the heaviest child weigh?
- C. 180 seventh graders received their class schedules today. Six schedules contained errors. How many schedules were correct?
- D. 180 crackers are in 6 packages. How many crackers are in 3 packages?

19. Which problem matches this equation?

$$240 \div 8 = x$$

- A. 240 animals at the zoo can be fed in 8 hours. How many animals can be fed in 4 hours?
- B. Mimi's book contains 240 pages. Eight of those pages contain errors. How many pages were correct?
- C. Eight pieces of furniture weigh a total of 240 pounds. How much does the heaviest piece of furniture weigh?
- D. Martha has 4 hours to create 8 floral arrangements. About how many minutes can she spend on each flower arrangement?

20. Which situation could be represented by the equation $d = 36t$?

- A. d is the distance in inches of t yards.
- B. d is the time in hours of t minutes.
- C. d is the volume in ounces t quarts.
- D. d is the distance in yards of t miles.

21. Which situation could be represented by the equation $y = \frac{x}{1000}$?

- A. y is the mass in kilograms of x grams.
- B. y is the time in minutes of x days.
- C. y is the volume in milliliters of x liters.
- D. y is the distance in yards of x miles.

22. Which problem could be modeled by this equation?

$$\frac{10 + 16 + x}{3} = 12$$

- A. Three boxes contain 10, 12, and 16 ounces of cereal. What is the total number of ounces of cereal in the three boxes?
- B. Sam had 3 cookies. One cookie has 10 chocolate chips; the second had 16 chips. If the average number of chips for all three cookies was 12, how many chips did the third cookie have?
- C. Sara mowed 10 lawns the first week of summer, 16 lawns the second week, and 3 lawns the third week. How many lawns did she mow altogether?
- D. Cory has a 10-year-old brother and a 16-year-old sister. Cory is 12 years old. What is the average age of the three children in Cory's family?

23. For a weekend assignment, Mrs. Raleigh told her class to read one-fifth of a 200-page book. Someone asked, "How many pages is that?" Mrs. Raleigh answered, "You can calculate p , the number of pages you have to read, using this equation," and she wrote on the blackboard:

$$p = 0.20 \times 200$$

Which of the following problems could be solved using the same equation?

- A. 20 apples are cut into 200 pieces. If the apples are cut evenly, how many pieces come from each?
- B. 200 students were asked if they carried a pen. 20% answered yes. How many students is that?
- C. A \$200 smartphone is reduced in price by 20%. What is the new selling price?
- D. At a factory, 20 workers out of 200 use public transportation. What percent use public transportation?

24. Jack's family was driving to his grandmother's house. Jack asked how long it would take to get there. His father said, "We are 180 miles away and we are driving at a rate of 45 mph." Jack realized that the time t could be determined from this equation:

$$t = 180 \div 45$$

Which of the following problems could be solved using the same equation?

- A. Martha can type 45 words per minute. How many words can she type in 180 minutes?
- B. Mr. Lewis bought 45 raffle tickets for a total of \$180 dollars. What did each raffle ticket cost?
- C. At a basketball tournament, Jeanine scored 45 out of her team's 180 points. What percent of the points did Jeanine score?
- D. Lucy has to do a 3-hour job. She has already spent 45 minutes on the job. How much time is left?

25. Given that $A < C$ and that B and D are both even, substitute number values for each letter in the following problem, solve, and explain your answer.

$$A + B + C = D$$

26. Look at this equation:

$$\frac{A + B}{2} = C$$

Find three different numbers that you could substitute for the letters, given these restrictions: $A \neq 0$, $B > 3$ and C is even.

27. Which problem could be modeled by this equation?

$$\frac{14 + 12 + x}{3} = 10$$

- A. Nora's children are 14, 12, and 10 years old. What is the average age of Nora's children?
- B. Three students read 10, 12, and 14 books each. What was the total number of books they read?
- C. David ran 14 miles the first week and 12 miles the second week. If he averaged 10 miles ran over 3 weeks, how many miles did he run on the third week?
- D. Meredith watered 14 plants at one house, 12 plants at another house, and 3 plants at a third house. How many plants did she water altogether?

28. Which problem is solved with the equation $\frac{H}{5} = 2$?

- A. If you work 5 times a month, how much will you work in a year?
- B. If you work for 2 hours, how much is $\frac{1}{5}$ of your day?
- C. If one-fifth of your work day is 2 hours, how long is your workday?
- D. If you work for 2 hours a day, how long will you work in a year?

Solutions for equations and inequalities 3/16/2018

1. Answer: C Objective: 6.EE.5	15. Answer: D Objective: 6.EE.5
2. Answer: D Objective: 6.EE.5	16. Answer: D Objective: 6.EE.5
3. Answer: C Objective: 6.EE.5	17. Answer: A Objective: 6.EE.5
4. Answer: B Objective: 6.EE.5	18. Answer: A Objective: 6.EE.5
5. Answer: B Objective: 6.EE.5	19. Answer: D Objective: 6.EE.5
6. Answer: D Objective: 6.EE.5	20. Answer: A Objective: 6.EE.5
7. Answer: C Objective: 6.EE.5	21. Answer: C Objective: 6.EE.5
8. Answer: B Objective: 6.EE.5	22. Answer: B Objective: 6.EE.5
9. Answer: B Objective: 6.EE.5	23. Answer: B Objective: 6.EE.5
10. Answer: A Objective: 6.EE.5	24. Answer: B Objective: 6.EE.5
11. Answer: A Objective: 6.EE.5	25. Answer: [answers vary] Objective: 6.EE.5
12. Answer: C Objective: 6.EE.5	26. Answer: [answers vary] Objective: 6.EE.5
13. Answer: A Objective: 6.EE.5	27. Answer: C Objective: 6.EE.5
14. Answer: B Objective: 6.EE.5	28. Answer: C Objective: 6.EE.5