Single-Step Real World Problems

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1. Tyrone's bank account had a balance of -$77.30 last week. His paycheck of $268.16 was deposited this week. If there have been no other transactions, which of the following is true?

- A. Tyrone's current account balance is -$190.86.
- B. Tyrone's current account balance is $345.46.
- C. Tyrone's current account balance is $190.86.
- D. Tyrone's current account balance is -$345.46.

2. A scuba diver descended $14\frac{5}{12}$ feet below sea level. Then, he descended another $3\frac{2}{5}$ feet. Which of the following is true?

- A. After both descents, the scuba diver was at $-11\frac{1}{60}$ feet.

- B. After both descents, the scuba diver was at $17\frac{49}{60}$ feet.

- C. After both descents, the scuba diver was at $11\frac{1}{60}$ feet.

- D. After both descents, the scuba diver was at $-17\frac{49}{60}$ feet.

3. A ceiling fan can rotate 150.43 times per minute. The fan rotated a total of 4,212.04 times. Which of the following is true?

- A. The fan rotated for 29 minutes.
- B. The fan rotated for 30 minutes.
- C. The fan rotated for 28 minutes.
- D. The fan rotated for 27 minutes.

4. A diver descended at a constant rate of 16.95 feet every 3 minutes. Which of the following is true?

- A. After one minute, the diver was at -8.475 feet.

- B. After one minute, the diver was at 5.65 feet.

- C. After one minute, the diver was at 8.475 feet.

- D. After one minute, the diver was at -5.65 feet.

5. Tonya has a small picture with a length of $4\frac{2}{5}$ inches. She wants to enlarge the picture by a factor of 7 and frame it. Which of the following is true?

- A. The enlarged picture has a length of $30\frac{4}{5}$ inches.

- B. The enlarged picture has a length of $16\frac{5}{7}$ inches.

- C. The enlarged picture has a length of $5\frac{4}{5}$ inches.

D. The enlarged picture has a length of $28\frac{2}{5}$ inches.

Barney has $17\frac{2}{3}$ feet of lumber that he is going to cut into 4 equal pieces for a border on his garden. Which of
6. the following is true?

    ○ A. Each piece of lumber is $1\frac{5}{12}$ feet long.

    ○ B. Each piece of lumber is $4\frac{5}{12}$ feet long.

    ○ C. Each piece of lumber is $4\frac{1}{4}$ feet long.

    ○ D. Each piece of lumber is $13\frac{2}{3}$ feet long.

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7. Fredo has a coupon for $1.00 off the price of a loaf of bread at the grocery store. After he arrived at the store, he found out the bread had already been marked down $2.00. What is the total discount on the price of the bread?

    ○ A. $3.00
    ○ B. -$1.00
    ○ C. $1.00
    ○ D. -$3.00

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8. Griffin ordered a pair of sneakers online. He had a $17 credit that he applied toward the purchase, and then he used a credit card to pay for the rest of the cost. If the shoes cost $58, how much did Griffin charge to his credit card when he bought the sneakers?

    ○ A. $41
    ○ B. $75
    ○ C. $24
    ○ D. $92

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9. Karana bought two items using a credit card. The first item cost $228, and the second item cost $376. Later, she returned both items to the store. What was the change to the amount Karana owed her credit card company?

    ○ A. -$604
    ○ B. -$148
    ○ C. $604
    ○ D. $148

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10. The temperature outside is -4°F, and the wind chill is -11°F. What is the difference between the temperature and the windchill?

    ○ A. -15°F
    ○ B. 7°F
    ○ C. 15°F
    ○ D. -7°F

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11. Frederico's checking account balance is -$18, and Neela's checking account balance is -$234. How many times the balance of Frederico's checking account is Neela's checking account balance?

    ○ A. 13
    ○ B. 13

C. 216

D. -216

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12. Lainey is sliding down a water slide that is 343 feet long at a rate of 49 feet per second. How long will it take Lainey to travel from the top to the bottom of the slide?

A. -7 seconds
B. 7 seconds
C. -294 seconds
D. 294 seconds

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13. The altitude of an airplane is decreasing at a rate of 44 feet per second. What is the change in altitude of the airplane over a period of 24 seconds?

A. 68 feet
B. 1,056 feet
C. -1,056 feet
D. -68 feet

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14. Pilar used four reusable shopping bags on a recent purchase she made at a grocery store. Each bag decreased the amount she spent by 5 cents. What was the change to the amount Pilar spent at the grocery store by using the reusable bags?

A. -20 cents
B. 20 cents
C. -9 cents
D. 9 cents

Chester has a coupon for $\frac{1}{10}$ off the price of a shirt. If the shirt originally costs \$35.60, what discount would Chester receive

15. from using his coupon?

A. \$3.56
B. \$7.12
C. \$0.28
D. \$32.04

The juice dispenser in the cafeteria holds $28\frac{1}{3}$ pints of juice.

The cups in the cafeteria only hold $\frac{1}{3}$ of a pint of juice.

16. How many full cups can be served at breakfast?

A. 3

B. 85

C. $42\frac{1}{3}$

D. 255

Garnet has a container with $14\frac{1}{2}$ cups of flour in it. She can make one dozen muffins with $2\frac{1}{2}$ cups of flour. How many

17. dozens of muffins can Garnet make with the flour she has?

- A. $5\frac{1}{2}$
- B. $36\frac{1}{4}$
- C. 12
- D. $5\frac{4}{5}$

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18. Foster makes sandwiches at a deli. There are $9\frac{1}{2}$ pounds of turkey at the deli. How many $\frac{1}{4}$-pound turkey sandwiches can he make?

- A. 38
- B. 19
- C. 18
- D. 36

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19. It takes Shonda $\frac{5}{6}$ of an hour to dry one load of laundry in her dryer. How many hours will it take her to dry 8 loads of laundry?

- A. $1\frac{1}{3}$
- B. $\frac{5}{48}$
- C. $2\frac{1}{6}$
- D. $6\frac{2}{3}$

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20. The price of a gallon of gasoline is $2.25. The price when Ryan's mother started driving was $\frac{4}{5}$ of the current price.

What was the price of gasoline when Ryan's mother started driving?

- A. $1.45
- B. $1.80
- C. $3.05
- D. $2.30

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21. Cady found that she uses $\frac{1}{5}$ of a roll of paper towels each week. How many rolls of paper towels will she use in 11 weeks?

- A. 55
- B. 16
- C. $2\frac{1}{5}$
- ○

D. $3\frac{1}{5}$

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22. Kate is making hamburgers for her friends and has $6\frac{1}{2}$ pounds of hamburger. How many $\frac{1}{4}$-pound hamburgers can she make?

○ A. 13

○ B. 26

○ C. 4

○ D. 104

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23. Paul drinks 53.15 fluid ounces of water per day. How much water does he drink in 6 days?

○ A. 59.15 fluid ounces
○ B. 265.75 fluid ounces
○ C. 372.05 fluid ounces
○ D. 318.9 fluid ounces

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24. Hal bought a guitar for $118.69 and a set of drums for $253.58. What was the total cost of his purchase?

○ A. $372.27
○ B. $369.17
○ C. $370.37
○ D. $373.27

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25. Pablo bought 5 sodas for him and his friends to share. If he spent $7.20 for all 5 sodas, how much did each soda cost?

○ A. $1.44
○ B. $12.20
○ C. $36.00
○ D. $2.20

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26. Mrs. Martinez is putting gas in her car. If each gallon costs $1.94, how much did it cost her to put in 16 gallons of gas?

○ A. $31.04
○ B. $32.98
○ C. $14.06
○ D. $17.94

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27. Leslie goes to the pet store to buy a goldfish. The sign below is on the tank.

3 GOLDFISH FOR $1.56!!!

How much would it cost Leslie to buy one goldfish?

○ A. $0.52
○ B. $1.04

D. $2.48

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28. Ben weighs 130.5 pounds, and Jennifer weighs 113.5 pounds. How many more pounds does Ben weigh than Jennifer?

- A. 19
- B. 17.6
- C. 16.6
- D. 17

---

29. Brian rides his bike 0.33 of a mile per minute. If it takes him 20 minutes to ride his bike to his friend's house, how far away does his friend live?

- A. 20.33 miles
- B. 6.6 miles
- C. 6.93 miles
- D. 19.67 miles

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30. Steven swam 200 meters in 25.5 seconds while Michelle finished in 26.8 seconds. How much faster did Steven swim than Michelle?

- A. 0.5 second
- B. 1.3 seconds
- C. 0.3 second
- D. 1.8 seconds

Answers

1. C
2. D
3. C
4. D
5. A
6. B
7. D
8. A
9. A
10. B
11. A
12. B
13. C
14. A
15. A
16. B
17. D
18. A
19. D
20. B
21. C
22. B
23. D
24. A
25. A
26. A
27. A
28. D
29. B
30. B

Explanations

1. To find Tyrone's current account balance, add his balance from last week of -$77.30 to his paycheck from this week of $268.16.

A negative number plus a positive number is equal to the positive number minus the absolute value of the negative number.

$$(-77.3) + 268.16 = 268.16 - |-77.3|$$
$$= 268.16 - 77.3$$
$$= 190.86$$

Therefore, **Tyrone's current account balance is $190.86**.

A scuba diver descends below sea level which makes his depth negative. To find how deep the scuba diver is after both descents, calculate the sum of the two distances.

A negative number plus a negative number is equal to the negative of the sum of the absolute values of the numbers.

$$\left(-14\tfrac{5}{12}\right) + \left(-3\tfrac{2}{5}\right) = -\left(\left|-14\tfrac{5}{12}\right| + \left|-3\tfrac{2}{5}\right|\right)$$
$$= -\left(\tfrac{173}{12} + \tfrac{17}{5}\right)$$
$$= -\left(\tfrac{865}{60} + \tfrac{204}{60}\right)$$
$$= -\left(\tfrac{1,069}{60}\right)$$
$$= -17\tfrac{49}{60}$$

Therefore, after both descents, the scuba diver was at

2. $-17\tfrac{49}{60}$ feet.

3. Divide the number of rotations by the rotations per minute.

4,212.04 rotations ÷ 150.43 rotations per minute = 28 minutes

Therefore, **the fan rotated for 28 minutes**.

4. Divide the distance traveled, -16.95 feet, by 3 minutes. The distance traveled is negative because the diver is descending.

-16.95 feet ÷ 3 minutes = -5.65 feet per minute

Therefore, **after one minute, the diver was at -5.65 feet**.

To find the length of the new picture, multiply the length
of the original by the scale factor 7.

$$4\tfrac{2}{5} \text{ inches} \times 7 = \tfrac{22}{5} \text{ inches} \times \tfrac{7}{1}$$

$$= \tfrac{154}{5} \text{ inches}$$

$$= 30\tfrac{4}{5} \text{ inches}$$

5. Therefore, the enlarged picture has a length of $30\tfrac{4}{5}$ inches.

To find the length of each piece of lumber, divide the total
by 4.

$$17\tfrac{2}{3} \text{ feet} \div 4 = \tfrac{53}{3} \text{ feet} \div \tfrac{4}{1}$$

$$= \tfrac{53}{3} \text{ feet} \times \tfrac{1}{4}$$

$$= \tfrac{53}{12} \text{ feet}$$

$$= 4\tfrac{5}{12} \text{ feet}$$

6. Therefore, each piece of lumber is $4\tfrac{5}{12}$ feet long.

7. The discount Fredo received from the coupon was -$1.00, and the discount Fredo received in the store was -$2.00.

To find the total discount on the price of the bread, add the discount from the coupon to the discount in the store.

$$-\$1.00 + (-\$2.00) = -\textbf{\$3.00}$$

8. Griffin has a credit, so the company owes him $17 that he can use to pay for part of his purchase. This is represented by -$17.

To find the amount that Griffin charged to his credit card, add his credit to the cost of the sneakers.

$$-\$17 + \$58 = \$58 - \$17$$
$$= \textbf{\$41}$$

9. When Karana returned each item, the amount she owed her credit card company decreased. So, the change was negative.

The amount she owed changed by -$228 when she returned the first item, and it changed by -$376 when she returned the second item.

To find the total change to the amount she owed, add the change from returning the first item to the change from returning the second item.

$$-\$228 + (-\$376) = -\textbf{\$604}$$

10. To find the difference between the temperature and the windchill, subtract -11°F from -4°F.

$$-4°F - (-11°F) = -4°F + 11°F$$

$$= \textbf{7°F}$$

11. Divide Neela's checking account balance by Frederico's checking account balance.

$$-\$234 \div (-\$18) = \$234 \div \$18$$
$$= 13$$

Therefore, Neela's checking account balance is **13** times Frederico's checking account balance.

12. Lainey is sliding down the slide, so the distance she travels can be expressed as -343 feet, and her speed can be expressed as -49 feet per second.

To find how long it will take Lainey to travel from the top to the bottom of the slide, divide -343 feet by Lainey's speed.

$$-343 \text{ feet} \div (-49 \text{ feet per second}) = 343 \text{ feet} \div 49 \text{ feet per second}$$
$$= 7 \text{ seconds}$$

Therefore, it will take Lainey **7 seconds** to travel from the top to the bottom of the slide.

13. The altitude of the airplane is decreasing, so its altitude is changing at a rate of -44 feet per second.

Multiply the time by -44 feet per second to find the total change in altitude of the airplane.

$$24 \text{ seconds} \times (-44 \text{ feet per second}) = -(24 \text{ seconds} \times 44 \text{ feet per second})$$
$$= -1{,}056 \text{ feet}$$

Therefore, the change in altitude is **-1,056 feet**.

14. Pilar decreased the amount she spent at the grocery store by 5 cents for each reusable bag she used.

Therefore, the amount she spent changed by -5 cents for each reusable bag she used.

Multiply the number of bags by -5 cents per bag to find the total change to the amount Pilar spent.

$$4 \text{ bags} \times (-5 \text{ cents per bag}) = -(4 \text{ bags} \times 5 \text{ cents per bag})$$
$$= -20 \text{ cents}$$

Therefore, the amount Pilar spent at the grocery store changed by **-20 cents** because she used 4 reusable bags.

To determine the discount Chester would receive, multiply the cost of the shirt by $\frac{1}{10}$.

$$\$35.60 \times \tfrac{1}{10} = (\$35.60 \times 1) \div 10$$
$$= \$35.60 \div 10$$
$$= \$3.56$$

15. Therefore, Chester would receive a $3.56 discount.

To determine the number cups that can be served, first convert the mixed number to an improper fraction.

$$28\tfrac{1}{3}\text{ pints} = \tfrac{85}{3}\text{ pints}$$

Next, divide the total pints by the amount each cup can hold, $\tfrac{1}{3}$ pint per cup. Remember, dividing by a fraction is the same as multiplying by its reciprocal. The units of the fraction will also flip.

$$\tfrac{85}{3}\text{ pints} \div \tfrac{1}{3}\tfrac{\text{pint}}{\text{cup}} = \tfrac{85}{3}\text{ pints} \times \tfrac{3}{1}\tfrac{\text{cups}}{\text{pint}}$$
$$= 85\text{ cups}$$

16. Therefore, the cafeteria can serve 85 cups.

To determine the number of dozens of muffins Garnet can make, first convert the mixed numbers to improper fractions.

$$14\tfrac{1}{2}\text{ cups} = \tfrac{29}{2}\text{ cups}$$
$$2\tfrac{1}{2}\text{ cups} = \tfrac{5}{2}\text{ cups}$$

Next, divide the total cups of flour by the number of cups in one dozen muffins. Remember, dividing by a fraction is the same as multiplying by its reciprocal. The units of the fraction will also flip.

$$\tfrac{29}{2}\text{ cups} \div \tfrac{5}{2}\tfrac{\text{cups}}{\text{dozen}} = \tfrac{29}{2}\text{ cups} \times \tfrac{2}{5}\tfrac{\text{dozen}}{\text{cups}}$$
$$= \tfrac{58}{10}\text{ dozens}$$
$$= 5\tfrac{4}{5}\text{ dozens}$$

17. Therefore, Garnet can make $5\tfrac{4}{5}$ dozens of muffins.

To determine the number of $\tfrac{1}{4}$–pound sandwiches Foster can make, first convert the mixed number to an improper fraction.

$$9\tfrac{1}{2}\text{ lb} = \tfrac{19}{2}\text{ lb}$$

Next, divide the total pounds of turkey by the amount of turkey on each sandwich. Remember, dividing by a fraction is the same as multiplying by its reciprocal. The units of the fraction will also flip.

$$\tfrac{19}{2}\text{ lb} \div \tfrac{1}{4}\frac{\text{lb}}{\text{sandwich}} = \tfrac{19}{2}\text{ lb} \times \tfrac{4}{1}\frac{\text{sandwiches}}{\text{lb}}$$
$$= 38\text{ sandwiches}$$

18. Therefore, Foster can make 38 sandwiches.

To determine the number of hours needed, multiply the number of hours for one load to dry by the number of loads.

$$\frac{5}{6} \frac{\text{hr}}{\text{load}} \times 8 \text{ loads} = \frac{5}{6} \frac{\text{hr}}{\text{load}} \times \frac{8}{1} \text{ loads}$$
$$= \frac{40}{6} \text{ hr}$$
$$= 6\frac{2}{3} \text{ hr}$$

Therefore, Shonda needs $6\frac{2}{3}$ hours to dry 8 loads of laundry.

19. To determine the price when Ryan's mother started driving, multiply the current price by $\frac{4}{5}$.

$$\$2.25 \times \frac{4}{5} = (\$2.25 \times 4) \div 5$$
$$= \$9.00 \div 5$$
$$= \$1.80$$

20. Therefore, the price was $1.80 per gallon of gas.

To determine the number of rolls of paper towels she will use, multiply the fraction of a roll she uses in one week by the number of weeks.

$$\frac{1}{5} \frac{\text{roll}}{\text{week}} \times 11 \text{ weeks} = \frac{1}{5} \frac{\text{roll}}{\text{week}} \times \frac{11}{1} \text{ weeks}$$
$$= \frac{11}{5} \text{ rolls}$$
$$= 2\frac{1}{5} \text{ rolls}$$

Therefore, Cady will use $2\frac{1}{5}$ rolls of paper towels in 21. 11 weeks.

To determine the number of $\frac{1}{4}$–pound hamburgers Kate can make, first convert the mixed number to an improper fraction.

$$6\frac{1}{2} \text{ lb} = \frac{13}{2} \text{ lb}$$

Next, divide the total pounds of hamburger meat by the size of the hamburgers. Remember, dividing by a fraction is the same as multiplying by its reciprocal. The units of the fraction will also flip.

$$\frac{13}{2} \text{ lb} \div \frac{1}{4} \frac{\text{lb}}{\text{hamburger}} = \frac{13}{2} \text{ lb} \times \frac{4}{1} \frac{\text{hamburgers}}{\text{lb}}$$
$$= 26 \text{ hamburgers}$$

22. Therefore, Kate can make 26 hamburgers.

23. To find how much water Paul drinks in 6 days, multiply the amount of water he drinks per day, 53.15 fluid ounces, by 6 days.

53.15 fluid ounces per day × 6 days = 318.9 fluid ounces

So, in 6 days, Paul drinks **318.9 fluid ounces** of water.

24. In order to figure out the total cost, add the price of the guitar to the price of the drums.

$$\$118.69 + \$253.58 = \$372.27$$

So, altogether, his total cost was **$372.27**.

25. To find how much each soda cost, divide the total amount Pablo spent, $7.20, by 5 sodas.

$$\$7.20 \div 5 \text{ sodas} = \$1.44 \text{ per soda}$$

So, each soda costs **$1.44**.

26. To find how much it cost Mrs. Martinez to put 16 gallons of gas in her car, multiply the cost of each gallon, $1.94, by 16 gallons.

$$\$1.94 \text{ per gallon} \times 16 \text{ gallons} = \$31.04$$

So, it cost Mrs. Martinez **$31.04** to put 16 gallons of gas in her car.

27. To find how much it would cost Leslie to buy one goldfish, divide the total cost, $1.56, by 3 goldfish.

$$\$1.56 \div 3 \text{ goldfish} = \$0.52 \text{ per goldfish}$$

So, it would cost Leslie **$0.52** to buy one goldfish.

28. In order to find out how much more Ben weighs than Jennifer, subtract Jennifer's weight from Ben's weight.

$$130.5 \text{ pounds} - 113.5 \text{ pounds} = 17 \text{ pounds}$$

So, Ben weighs **17** pounds more than Jennifer.

29. To find how far away Brian's friend lives, multiply the distance he rides his bike per minute, 0.33 of a mile, by the number of minutes he rides his bike, 20 minutes.

$$0.33 \text{ of a mile per minute} \times 20 \text{ minutes} = 6.6 \text{ miles}$$

So, Brian's friend lives **6.6 miles** away.

30. In order to find out how much faster Steven swam than Michelle, subtract Steven's time from Michelle's time.

$$26.8 \text{ seconds} - 25.5 \text{ seconds} = 1.3 \text{ seconds}$$

So, Steven swam **1.3 seconds** faster than Michelle.