

UNIT
3

Expressions, Equations, and Inequalities

Unit Test: C

1. Which equation below matches the relationship shown in the table?

p	0	1	2	5
q	-1.7	-1.4	-1.1	-0.2

- A $q = p - 1.7$
 B $q = 0.3p - 1.7$
 C $q = 2p - 1.7$
 D $q = 0.4p - 1.7$
2. Jill earns a yearly salary of \$40,000 plus 15% commission on total sales. Shonda earns a \$55,000 yearly salary plus 10% commission on total sales. If Jill and Shonda each have sales of \$750,000, how much more total income does Jill earn for the year?

- A \$22,500
 B \$37,500
 C \$130,000
 D \$152,000
3. What is the solution to the inequality below?

$$-3x - 14 \leq -5$$

- A $x \leq -3$
 B $x \leq 3$
 C $x \geq -3$
 D $x \geq 3$
4. What is the solution to the nearest tenth to the equation below?

$$0.3y = -2$$

- A 0.6
 B -6.7
 C -6
 D 6.7

5. Which table below represents the same linear relationship as $y = 0.15x - 8$?

A

x	0	2	4
y	-8	-7.7	-6.8

B

x	0	4	8
y	-8	-7.4	-6.8

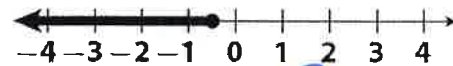
C

x	0	5	8
y	-8	-7.2	-6.8

D

x	0	6	8
y	-8	-7.8	-6.7

6. Which inequality has the graphed solution below?



- A $-2x - 4 \geq -5$
 B $-2x - 4 \geq 5$
 C $2x - 4 \leq -5$
 D $2x - 4 \leq 5$
7. Antonia currently has \$4,500 in her savings account. She saves \$150 per month. Cal currently has \$3,400 in his account. He saves \$250 per month. How much more money than Antonia will Cal have after 12 months?

- A \$100
 B \$250
 C \$6,300
 D \$6,400
8. Which of the following values of x is **not** a solution to the inequality $-5x - 1 \leq -9$?
- A 1
 B 2
 C 3
 D 4
9. How many positive integers are in the solution set of the inequality below?

$$-2x + 1 \geq -6$$

- A one
 B two
 C three
 D infinitely many

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Expressions, Equations, and Inequalities

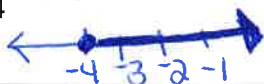
10. Mike and Joe are both plumbers. Mike charges an initial fee of \$100 plus an hourly fee of \$60. Joe charges an initial fee of \$50 plus an hourly fee of \$75. If Mike and Joe each have 3-hour jobs, who earns more money? How much more?

Mike will earn \$5 more

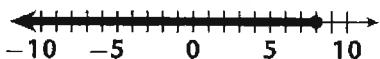
11. If $4a - 1 = 5$ and $2b - 8 = 17$, what is the value of $a + b$?

14

12. Draw a number line to represent the inequality $\frac{-x}{4} \leq 1$.



13. Complete the inequality for the number line below.



$\frac{-x}{2} \geq$ -4

14. The perimeter of a rectangle is less than or equal to 50 inches. The length of the rectangle is 10 inches. What inequality represents the possible values of the width of the rectangle?

$W \leq 15$
W must be a positive number

Use the table for 15–17.

Number of Hours	1	2	3	4
Price (\$)	22.50	29.25	36.00	42.75

A sailboat rental company charges an initial fee plus an hourly rate to rent sailboats. The costs are shown in the table above.

15. What is the initial fee to rent a sailboat?

\$15.75

16. What is the hourly rate to rent a sailboat?

\$6.75

17. Write a linear equation that shows the relationship between the cost and the number of hours of the sailboat rental.

$y = 15.75 + 6.75x$

18. Britney paid \$4.50 for two mangoes and one bag of grapes. Finn paid \$9.25 for three mangoes and two bags of grapes. Britney and Finn both paid \$1.25 for each mango. How much more did Finn pay for a bag of grapes?

\$0.75

19. Mr. Jacobs has a \$200 budget for school supplies. He purchased 12 reams of printer paper for \$4 each and six packs of dry-erase markers for \$3 each. He will spend the rest of his budget on calculators, which cost \$8 each. Write and solve an inequality that represents the number of calculators he can purchase.

$48 + 18 + 8c \leq 200$

$c \leq 16.75$

He can purchase up to 16 calculators

MODULE 6 Expressions and Equations

12. Massimo has \$90 in the bank. Every time he rides the bus he spends \$2.50. Write and solve an equation that Massimo can use to see how many times he can ride the bus.

$2.50x = 90 ; 36 \text{ times}$

13. Timani bought a video game console and some games for \$350. The video game console cost \$200. Each game cost \$25. How many games did Timani purchase?

6 games

14. Allison bought some shirts for her clothing store for \$15 each. She received \$50 off her entire purchase and spent a total of \$400. How many shirts did Allison purchase for her store?

30 shirts

15. Jane has 6 more than half the number of pairs of shoes that Mercedes has. Write an expression for this.

Sample

$\frac{M}{2} + 6$

16. Write a word phrase for $0.3x + 5$.

Three tenths of a number plus 5

17. Kelly has 4 dimes and some nickels. The total value of her coins is \$2.25. Write an equation for this.

4 dimes = \$0.40; some

Nickels = $0.05x$; $0.4 + 0.05x = 2.25$

18. Solve for x .

$0.25x = 10$

$x = 40$

19. Paco solved the equation $-3x - 5 = 1$. His work is shown below.

Step 1: $-3x - 5 = 1$

Step 2: $-3x = 6$

Step 3: $x = 2$

Where did Paco make an error in his calculation? Explain.

He \div 6 by 3 instead of -3 in step 3

20. Oswaldo earns a salary of \$2,500 per month plus an 8% commission on all of his sales. He wants to earn \$5,400 next month. Write an equation that shows what his total sales s must be in order for Oswaldo to reach his goal.

$2,500 + 0.08s = 5,400$

21. Wallace has a \$50 bill. Pizza pies cost \$12.25 each. If p represents the number of pizzas he buys, write an expression for the change he receives.

$50 - 12.25p$

22. Juma earns \$12.50 for each newspaper subscription he sells. He also earns a \$50 base salary each week. If he wants to earn \$400 next week, how many newspaper subscriptions does he need to sell? Write an equation and solve.

$50 + 12.50x = 400$

$x = 28$

MODULE
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Inequalities

12. Solve the inequality. Show your work.

$$\frac{x}{6} \leq 1$$

$$x \leq 6$$

Use the inequality for 13 and 14.

$$x + 8 \geq 5$$

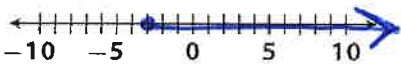
13. Solve the inequality. Show your work.

$$x + 8 \geq 5$$

$$-8 \quad -8$$

$$x \geq -3$$

14. Graph the solution on the number line.



Use the inequalities for 15–17.

① $-3x > 9$

② $3x > -9$

15. Explain the difference between the two inequalities. How does this affect your method of solution?

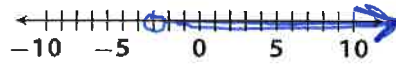
To solve #1 you need to \div by a negative so you have to flip the symbol. The 2nd one you \div by a positive & don't flip.

16. Solve the first inequality and graph its solution on the number line.



$$x < -3$$

17. Solve the second inequality and graph its solution on the number line.



$$x > -3$$

18. Raja solved the inequality $-3x - 5 \leq 1$. His work is shown below.

Step 1: $-3x - 5 \leq 1$

Step 2: $-3x \leq 6$

Step 3: $x \leq -2$

Where did Raja make an error in his calculation? Explain.

He forgot to flip the inequality symbol in step 3.

19. Joaquim earns a salary of \$4,000 per month plus a 6% commission on all of his sales. He wants to earn at least \$7,000 next month. Write an inequality that shows what his total sales s must be in order for Joaquim to reach his goal.

$$4,000 + 0.06s \geq 7,000$$

20. Every month, the bank withdraws \$15 from Betsy's checking account as a service fee. Betsy has budgeted \$75 for the next few service fees. For how many months will the service fee be covered? Write and solve an inequality to find the solution. Show your work.

$$15x \leq 75$$

$$\frac{15x}{15} \leq \frac{75}{15}$$

$x \leq 5$; Betsy can pay for more than 5 months of the service fee.