

تم تحميل هذا الملف من موقع المناهج الإماراتية



ملزمة أسئلة مراجعة وفق الهيكل الوزاري المسار العام منهج ريفيل

موقع المناهج ← المناهج الإماراتية ← الصف الثامن ← رياضيات ← الفصل الأول ← ملفات متنوعة ← الملف

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المزيد من مادة
رياضيات:

إعداد: مدرسة المسيرة

التواصل الاجتماعي بحسب الصف الثامن



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف الثامن والمادة رياضيات في الفصل الأول

ملزمة أسئلة مراجعة وفق الهيكل الوزاري المسار المتقدم منهج ريفيل

1

حل تجميعية أسئلة وفق الهيكل الوزاري حسب منهج بريدج

2

تجميعية أسئلة وفق الهيكل الوزاري حسب منهج بريدج

3

ملزمة تجميعية أسئلة وفق الهيكل الوزاري منهج بريدج

4

أسئلة اختبار قصير في الوحدة الثالثة المعادلات ذات المتغيرين

5



Almaseera School
Math Department



EOT Coverage Term 1

Gr-8 GEN -2024-2025



هيكـل امتحان نهاية الفصل الدراسي الأول للعام 2024-2025 للصف الثامن / عام

EOT T1 Exam Coverage Grade 8 GEN 2024-2025

Question*	Learning Outcome/Performance Criteria**	Reference(s) in the Student Book (Arabic Version)	
		المرجع في كتاب الطالب (النسخة العربية)	
السؤال*	نتائج التعلم / معايير الأداء**	Example/Exercise مثال/تمرين	Page الصفحة
1	Write very large and very small numbers using scientific notation	1-10	53
	Perform computations with numbers written in scientific notation	1-6	61
2	Use the Zero Exponent Rule and the Quotient of Powers Property to simplify expressions with zero and negative integer exponents	1-12	41
	Use the Power of a Power Property and the Power of a Product Property to simplify expressions with integer exponents	1-10	31
3	Use rational approximations to compare and order real numbers, including irrational numbers	1-7	121
4	Estimate irrational numbers by approximating their locations on a number line or by truncating their decimal expansions	1-11	109
5	Use the properties of equality to solve equations with variables on each side that have rational coefficients	1-8	135
6	Identify the slope of a line and interpret it as the rate of change within the context of the problem	1-7	203

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EOT T1 Exam Coverage Grade 8 GEN 2024-2025

الأسئلة الموضوعية - MCQ			
7	Use integer exponents to show repeated multiplication of rational numbers.	1-9	11
8	Use the Laws of Exponents to multiply and divide monomials with common bases.	1-9	23
9	Use the Power of a Power Property and the Power of a Product Property to simplify expressions with integer exponents.	1-10	31
10	Use the Zero Exponent Rule and the Quotient of Powers Property to simplify expressions with zero and negative integer exponents.	1-12	41
11	Find square and cube roots	1-7	89
12	Show how the decimal form of a rational number repeats eventually.	Learn 1-12	70 77
13	Use square and cube roots to solve equations involving perfect squares and cubes.	1-10	89
14	Identify irrational numbers and name the set(s) of real numbers to which a given real number belongs.	1-13	99

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EOT T1 Exam Coverage Grade 8 GEN 2024-2025

الأسئلة الموضوعية - MCQ	15	Write and solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms.	Examples	152-153
			1-3	157
	16	Write linear equations in one variable with rational coefficients and use the properties of equality to solve them.	Examples	138-139
			1-5	143
	17	Identify the number of solutions of a linear equation in one variable by simplifying each side and comparing coefficients and constants.	1-9	167
	18	Solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms.	1-7	149
	19	Graph and compare proportional relationships using words, equations, and tables and interpret the unit rate as the slope of the line.	Examples	177-180
			1-4	189
	20	Identify similar triangles that fall on the same line in a coordinate plane and show that the slopes of the lines are equal.	Example	208
			1-5	211
21	Derive the equation $y = mx$ from the slope formula and use direct variation equations to represent and solve real-world and mathematical problems.	6-11	224	

Unit 1

Write each expression using exponents. (Examples 1 and 2)

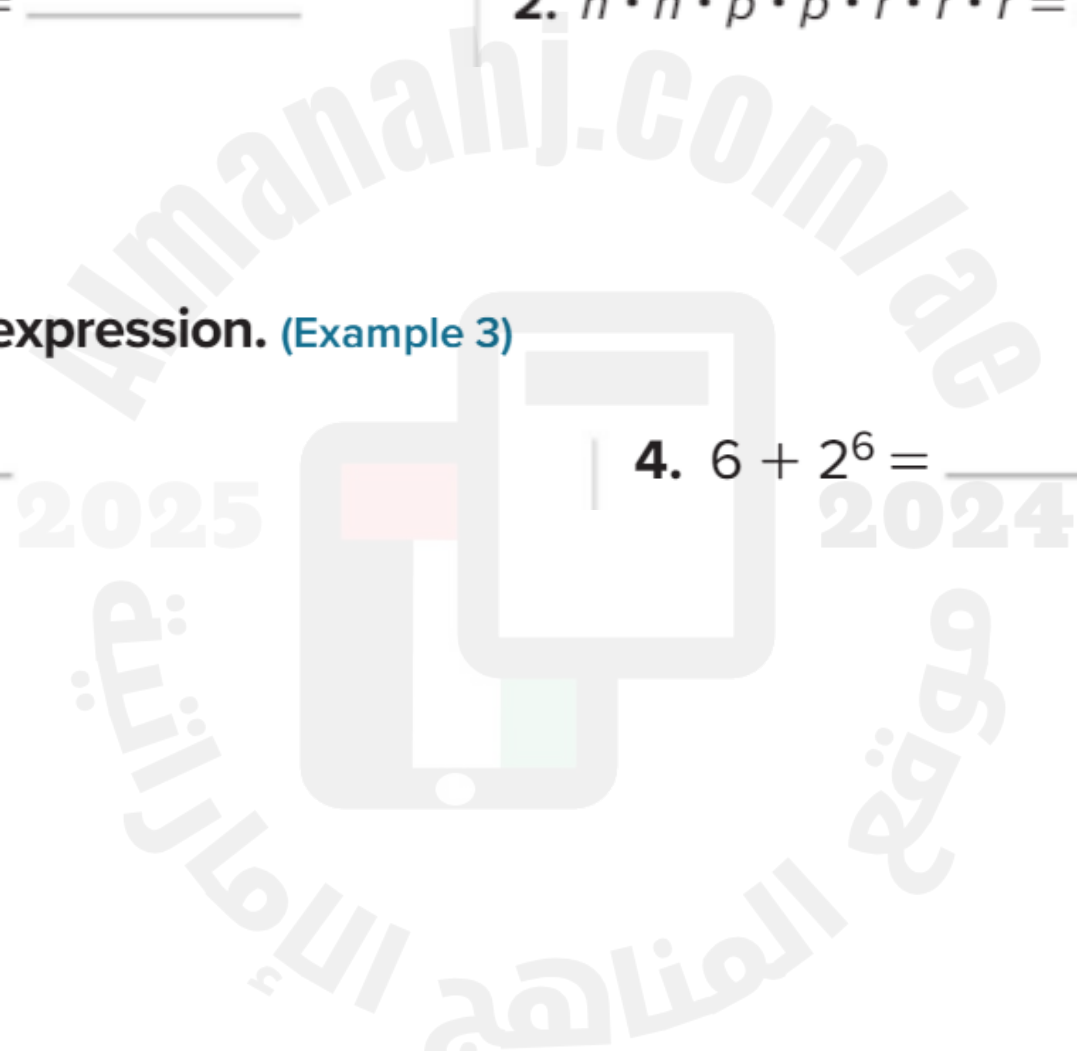
1. $(-7) \cdot (-7) \cdot 5 \cdot 5 \cdot 5 \cdot 5 =$ _____

2. $n \cdot n \cdot p \cdot p \cdot r \cdot r \cdot r =$ _____

Evaluate each numerical expression. (Example 3)

3. $3^4 - (-4)^2 =$ _____

4. $6 + 2^6 =$ _____



5. Evaluate $x^3 - y^2$ if $x = 2$ and $y = \frac{5}{4}$.

(Example 4)

6. Evaluate $(g + h)^3$ if $g = 2$ and $h = -3$.

(Example 5)

7. Replace \square with $<$, $>$, or $=$ to make a true statement: $(-3)^4 \square (-4)^3$.

8. A scientist estimates that, after a certain amount of time, there would be $2^5 \cdot 3^3 \cdot 10^5$ bacteria in a Petri dish. How many bacteria is this?

Test Practice

9. **Multiselect** Select all of the expressions that evaluate to negative rational numbers.

$(-9)^4$

$\left(-\frac{4}{5}\right)^3$

$3^5 - 10^4$

$(9.8)^2 - 10^2$

$\left(-\frac{3}{8}\right)^2$

Simplify each expression. (Examples 1–3)

1. $3^8 \cdot 3 =$ _____

2. $m^5 \cdot m^2 =$ _____

3. $3m^3n^2 \cdot 8mn^3 =$ _____

4. $9p^4 \cdot (-8p^2) =$ _____

5. Simplify $\frac{b^{12}}{b^5}$. (Example 4)

6. Simplify $\frac{5^5 \cdot 6^3 \cdot 8^{10}}{5^3 \cdot 6 \cdot 8^9}$. (Example 6)

7. A publisher sells 10^6 copies of a new science fiction book and 10^3 copies of a new mystery book. How many times as many science fiction books were sold than mystery books? (Example 5)

8. Simplify $\frac{45x^{15}}{9x^{10}}$. (Example 7)

Test Practice

9. Equation Editor Simplify $\frac{a^4c^6}{a^2c}$.

The image shows a digital equation editor interface. At the top is a grey rectangular display area. Below it is a keypad with several rows of buttons. The first row contains navigation buttons: left arrow, right arrow, undo, redo, and delete. The second row contains arithmetic operators: 1, 2, 3, +, -, ×, ÷. The third row contains comparison operators: 4, 5, 6, <, ≤, =, ≥, >. The fourth row contains mathematical functions and constants: 7, 8, 9, $\frac{x}{n}$, x^n , (), ||, \sqrt{x} , $\sqrt[n]{x}$, π . The fifth row contains basic operators: 0, ., -.

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Simplify each expression. (Examples 1–4)

1. $(7^2)^3 =$ _____

2. $(8^3)^3 =$ _

3. $(d^7)^6 =$ _____

4. $(z^7)^3 =$ _____

Simplify each expression.

5. $(2m^5)^6 =$ _____

6. $(7a^5b^6)^4 =$ _____

7. $(-3w^3z^8)^5 =$ _____

8. $(-5r^4s^{10})^4 =$ _____

9. Which is greater: 1,000 or $(6^2)^3$? Explain.

Test Practice

10. **Multiselect** Select all of the expressions that simplify to the same expression.

$(x^3y^4)^2$

$(x^2y)^2$

$(x^3)^2y^6$

$x^6(y^4)^2$

$(x^3)^2(y^2)^4$

Simplify each expression. (Example 1)

1. $46^0 =$ _____

2. w^0 , where $w \neq 0$

Express each using a positive exponent.

(Example 2)

3. $8^{-4} =$ _____

4. $y^{-9} =$ _____

Express each fraction using a negative exponent. (Example 3)

5. $\frac{1}{d^6} =$ _____

6. $\frac{1}{10^5} =$ _____

Simplify each expression. (Examples 4 and 5)

7. $9^4 \cdot 9^{-6} =$ _____

8. $y^{-9} \cdot y^3 =$ _____

Simplify each expression. (Examples 4 and 5)

9. $\frac{x^{-8}}{x^{-12}} =$ _____

10. $\frac{d^{-13}}{d^{-2}} =$ _____

11. Simplify $8^{-7} \cdot 8^7 \cdot 10^4 \cdot 10^{-4}$.

Test Practice

12. **Multiselect** Select all of the expressions that are simplified.

- n^4
- $\frac{1}{n^{-5}}$
- $n^6 \cdot n^{-8}$
- $n^7 \cdot p^8$
- $\frac{1}{n^3}$

Practice..

Write each number in standard form. (Examples 1 and 2)

1. $1.6 \times 10^3 =$ _____

2. $1.49 \times 10^{-7} =$ _____

3. A calculator screen shows a number in scientific notation as $8.3E-6$. Write this number in standard form. (Example 3)

4. A calculator screen shows a number in scientific notation as $7E11$. Write this number in standard form. (Example 3)

Write each number in scientific notation. (Examples 4 and 5)

5. $2,204,000,000 =$ _____

6. $0.0000000642 =$ _____

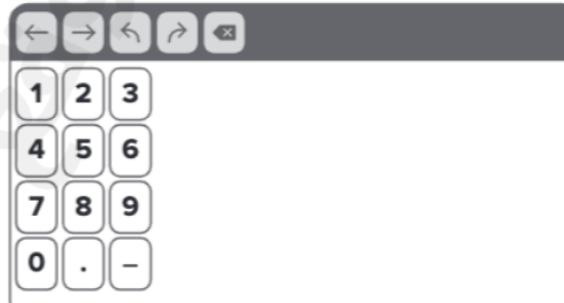
7. A common race is a 5K race, where runners travel 5 kilometers. Is it more appropriate to report the distance as 5 kilometers or 5×10^6 millimeters? Explain your reasoning. (Example 6)

8. The population of Florida was recently recorded as 20,612,439 people. Write an estimation in scientific notation for the population. (Example 7)

9. The diameter of a grain of sand is 0.0024 inch. Write an estimation in scientific notation for the diameter. (Example 7)

Test Practice

10. **Equation Editor** The mass of planet Earth is about 5.98×10^{24} kilograms. When this number is written in standard notation, how many zeros are in the number?



Practice..

1. There are about 3×10^{11} stars in our galaxy and about 100 billion galaxies in the observable universe. Suppose every galaxy has as many stars as ours. How many stars are in the observable universe? Write in scientific notation.

(Example 1)

2. Humpback whales are known to weigh as much as 80,000 pounds. The tiny krill they eat weigh only 2.1875×10^{-3} pound. About how many times greater is the weight of a humpback whale? (Example 2)

Evaluate. Express each result in scientific notation. (Example 3)

3. $(1.28 \times 10^5) + (1.13 \times 10^3) =$

4. $(7.26 \times 10^6) - (1.3 \times 10^4) =$

5. The speed of light is about 1.86×10^5 miles per second. The star Sirius is about 5.062×10^{13} miles from Earth. About how many seconds does it take light to travel from Sirius to Earth? Write in scientific notation, rounded to the nearest hundredth.

6. **Table Item** The table shows the amount of money raised by each region. The four regions raised a total of $\$(5.38 \times 10^4)$. How much did the West raise?

Region	Amount Raised (\$)
East	1.46×10^4
North	2.38×10^4
South	6.75×10^3
West	

Unit 2

Learn Terminating and Repeating Decimals

Every rational number can be expressed as a decimal by dividing the numerator by the denominator. The decimal form of a rational number either terminates in 0s or eventually repeats. **Repeating decimals** are decimals in which 1 or more digits repeat. If the repeating digit is zero, then the decimal is a **terminating decimal**.

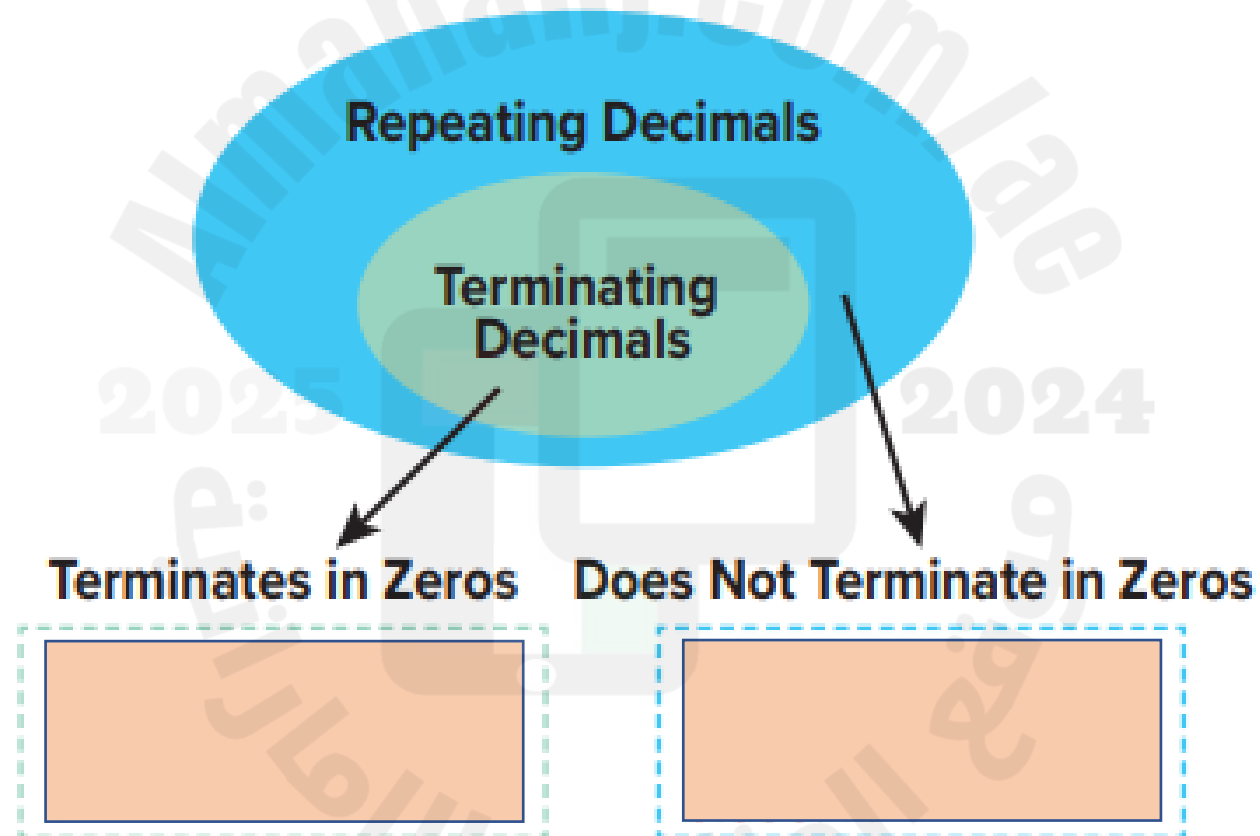
Bar notation is often used to indicate that a digit or group of digits repeats. The bar is placed above the digit(s) that repeat. For example, $0.833333333\dots$ can be written as $0.8\overline{3}$.

The animation shows that when a rational number is expressed as a decimal, and the repeating digit is not zero, the decimal does not terminate. To complete the table, write each fraction as a repeating decimal. Then write each repeating decimal as a terminating decimal. If the decimal does not terminate, write *does not terminate*.

Rational Number	Repeating Decimal	Terminating Decimal
$\frac{2}{5}$	<input type="text"/>	<input type="text"/>
$\frac{5}{6}$	<input type="text"/>	<input type="text"/>

Write each decimal from the list below in the correct box.

0.64000..., $0.\overline{56}$, 0.4242...,
0.84, 0.333..., 0.7



Write each rational number in decimal form. Then determine whether the decimal is a terminating decimal. (Examples 1 and 2)

1. $-\frac{11}{16} =$ _____

2. $\frac{5}{33} =$ _____

3. $4\frac{3}{8} =$

4. $-9\frac{11}{30} =$

Write each decimal as a fraction or mixed number in simplest form. (Examples 3 and 4)

5. $0.\overline{8} =$ _____

6. $-\overline{0.18} =$ _____

7. $-\overline{1.5} =$ _____

8. $4.\overline{45} =$ _____

9. One pint is about $\frac{5}{9}$ liter. Write $\frac{5}{9}$ as a decimal.

10. Phoebe won $\frac{7}{16}$ of the competitions she entered. Write $\frac{7}{16}$ as a decimal.

11. Write the decimal 5.666... as a mixed number in simplest form.

Test Practice

12. **Multiselect** Select all of the fractions that, when converted, result in a non-terminating decimal.

$-\frac{11}{5}$

$\frac{1}{50}$

$\frac{1}{225}$

$\frac{7}{26}$

$\frac{5}{16}$

$-\frac{3}{32}$

Simplify using rational numbers. If the expression cannot be simplified, explain why. (Examples 1–4)

1. $\sqrt{361} =$ _____

2. $\pm\sqrt{1.96} =$ _____

3. $-\sqrt{\frac{9}{16}} =$ _____

4. $\sqrt{-441} =$ _____

5. Solve $m^2 = 0.04$. (Example 5) _____

Simplify using rational numbers. (Examples 6 and 7)

6. $\sqrt[3]{343} =$ _____

7. $\sqrt[3]{-512} =$ _____

8. A basin of a water fountain is cube shaped and has a volume of 91.125 cubic feet. Solve $s^3 = 91.125$ to find the length s of one side of the basin. (Example 8)

9. Moesha has 196 pepper plants that she wants to plant in a square formation. How many pepper plants should she plant in each row?

Test Practice

10. **Equation Editor** What is the value of p in the equation shown?

$$p^3 = -0.027$$



Identify whether each number is *rational* or *irrational*. (Example 1)

1. $-\sqrt{10}$

2. $-\frac{3}{11}$

3. $0.\overline{3}$

4. $\sqrt{81}$

5. 0

6. $-\frac{\sqrt{2}}{2}$

7. $\sqrt{7}$

8. $\frac{\sqrt{2}}{\sqrt{2}}$

Select all the sets of numbers to which each real number belongs. (Examples 2–4)

9. $\sqrt[3]{343}$

- (A) Rational
- (B) Irrational
- (C) Integer
- (D) Whole
- (E) Natural

10. $\frac{7}{\sqrt{2}}$

- (A) Rational
- (B) Irrational
- (C) Integer
- (D) Whole
- (E) Natural

11. $-\frac{7}{1}$

- (A) Rational
- (B) Irrational
- (C) Integer
- (D) Whole
- (E) Natural

Determine whether each statement is *true* or *false*. If the statement is *true*, explain your reasoning. If the statement is *false*, provide a counterexample. (Examples 5 and 6)

12. A number cannot be irrational and an integer.

13. All integers are rational.

Estimate each square root or cube root to the nearest integer. (Examples 1 and 3)

1. $\sqrt{125} \approx$ _____

2. $\sqrt{55} \approx$ _____

Estimate each square root or cube root to the nearest integer. (Examples 1 and 3)

3. $\sqrt[3]{70} \approx$ _____

4. $\sqrt[3]{923} \approx$ _____

Estimate each square root to the nearest tenth. (Example 2)

5. $\sqrt{296} \approx$ _____

6. $\sqrt{5} \approx$ _____

7. $\sqrt{11} \approx$ _____

8. $\sqrt{62} \approx$ _____

9. The formula $s = \sqrt{18d}$ can be used to find the speed s of a car in miles per hour when the car needs d feet to come to a complete stop after stepping on the brakes. If it took a car 25 feet to come to a complete stop after stepping on the brakes, estimate the speed of the car. Truncate the value of $\sqrt{18d}$, when $d = 25$, to the tenths place. (Example 4)

10. If the area of a square is 32 square feet, estimate the length of each side of the square to the nearest whole number.

Test Practice

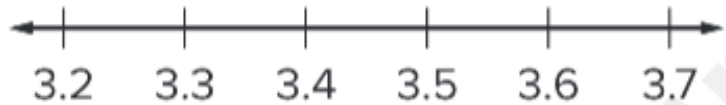
11. **Equation Editor** Estimate the square root to the nearest tenth.

$$\sqrt{489}$$

The keypad includes navigation buttons (left, right, undo, redo, clear) and a numeric keypad with digits 0-9, a decimal point, and a negative sign.

Complete each statement using $<$, $>$, or $=$. Then graph the numbers on the number line. (Examples 1 and 2)

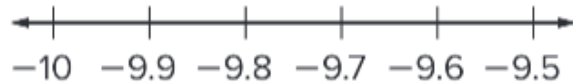
1. $\sqrt{11}$ _____ $3\frac{2}{3}$



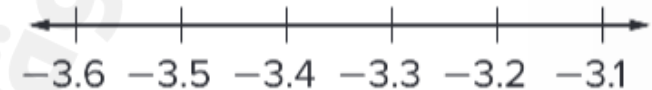
2. $\sqrt{3}$ _____ $\frac{\sqrt{10}}{2}$



3. $-\pi^2$ _____ $-\sqrt{93}$

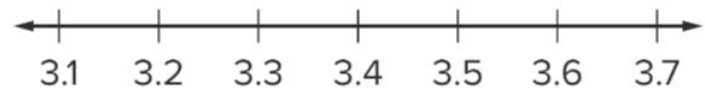


4. $-\sqrt{12}$ _____ -320%



Practice..

5. Order the set $\{3\frac{1}{2}, \frac{10}{3}, \pi, \sqrt{13}\}$ from least to greatest. Then graph the set on the number line. (Example 3)



6. The table shows the foul-shot statistics for three players in a recent basketball game. Which player had the greatest foul-shot statistic? (Example 4)

Player	Foul-Shot Statistic
1	$\frac{7}{9}$
2	72%
3	8 out of 10

Test Practice

7. **Multiple Choice** Select the symbol that makes the sentence true.

$$\sqrt{27} \text{ — } \frac{\sqrt{95}}{2}$$

(A) <
 (B) >
 (C) =
 (D) ≤



Unit 3

Practice..

Solve each equation. Check your solution. (Examples 1–3)

1. $-2a - 9 = 6a + 15$

2. $14 + 3n = 5n - 6$

3. $\frac{1}{2}x - 5 = 10 - \frac{3}{4}x$

4. $\frac{2}{3}y + 1 = \frac{1}{6}y + 8$

Solve each equation. Check your solution. (Examples 1–3)

5. $5.4p + 13.1 = -2.6p + 3.5$

6. $0.15w + 0.35 = 0.22w - 0.14$

7. Twelve more than seven times a number equals the number less six. Solve the equation $7x + 12 = x - 6$ to find the number, x .

Test Practice

8. **Equation Editor** Solve the equation shown for x .

$$3x - 15 = 17 - x$$

 **Example 1** Write and Solve Equations with Variables on Each Side

Green's Gym charges a one-time application fee of \$50 plus \$30 per session for a personal trainer. Breakout Gym charges an annual fee of \$250 plus \$10 for each session with a trainer.

For how many sessions is the cost of the two plans the same? Write and solve an equation to represent this problem. Check your solution.



Example 2 Write and Solve Equations with Variables on Each Side

Ryan's Rentals charges \$40 per day plus \$0.25 per mile. Road Trips charges \$25 per day plus \$0.45 per mile.

For what number of miles is the daily cost of renting a car the same? Write and solve an equation to represent this problem. Check your solution.



1. Marko has 45 comic books in his collection, and Tamara has 61 comic books. Marko buys 4 new comic books each month and Tamara buys 2 comic books each month. After how many months will Marko and Tamara have the same number of comic books?

2. A fish tank has 150 gallons of water and is being drained at a rate of $\frac{1}{2}$ gallon each second. A second fish tank has 120 gallons of water and is being filled at a rate of $\frac{1}{4}$ gallon each second. After how many seconds will the two fish tanks have the same amount of water?



3. Shipping Company A charges \$14 plus \$2.25 a pound to ship overnight packages. Shipping Company B charges \$20 plus \$1.50 a pound to ship an overnight package. For what weight is the charge the same for the two companies?

4. A bicycle rental company charges a \$20 fee plus \$5.50 per hour to rent a bicycle. Another bicycle rental company charges a \$15 fee plus \$6.50 per hour to rent a bicycle. For what number of hours is the cost for the rental the same?

5. **Open Response** Deanna and Lulu are playing games at the arcade. Deanna starts with \$15, and the machine she is playing costs \$0.75 per game. Lulu starts with \$13, and her machine costs \$0.50 per game. After how many games will the two friends have the same amount of money remaining? Let g represent the number of games.

Equation:

Number of Games:

Solve each equation. Check your solution.

1. $-g + 2(3 + g) = -4(g + 1)$

2. $-8 - x = -3(2x - 4) + 3x$

3. $0.6(4 - 2x) = 20.5 - (3x + 10)$

4. $12 - (4y + 8) = 0.5(8y - 16)$



Solve each equation. Check your solution.

5. $\frac{1}{2}(-4 + 6n) = \frac{1}{3}n + \frac{2}{3}(n + 9)$

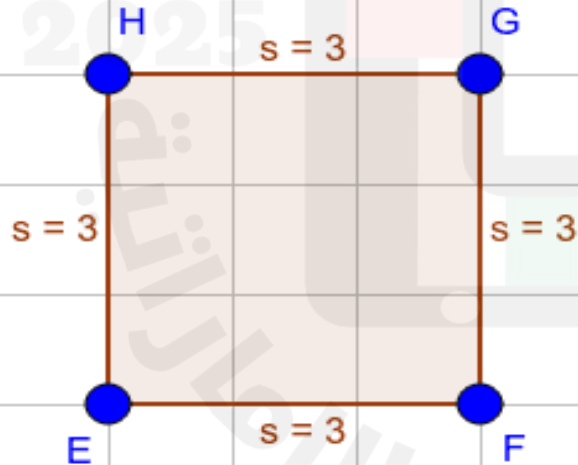
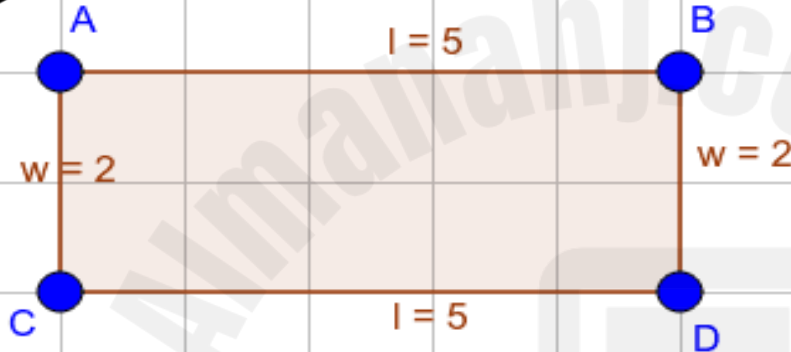
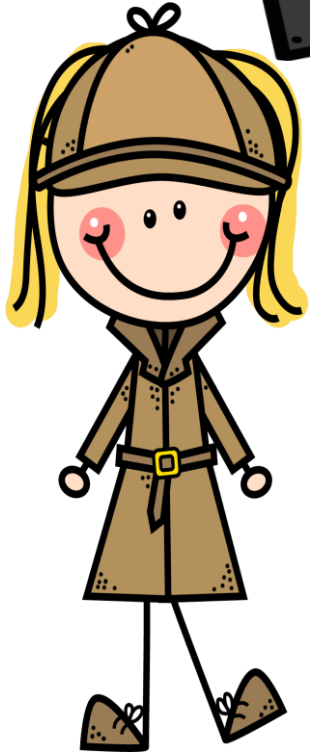
6. $\frac{1}{5}(5x - 5) + 3x = -9\left(\frac{1}{3}x + 4\right)$

7. **Equation Editor** Solve the equation shown for q .

$$2\left(\frac{1}{2}q + 1\right) = -3(2q - 1) + 8q + 4$$


Remember


$$\begin{aligned} \text{Or } P &= 2L + 2W \\ &= 2(5) + 2(2) \\ &= 10 + 4 \\ &= 14 \end{aligned}$$



Perimeter

Area


$$\begin{aligned} \text{Perimeter of Rectangle} &= 2(w+l) \\ &= 2(2+5) \\ &= 14 \end{aligned}$$


$$\begin{aligned} \text{Area of Rectangle} &= l \cdot w \\ &= 2 \cdot 5 \\ &= 10 \end{aligned}$$

$$\begin{aligned} \text{Perimeter of Square} &= 4s \\ &= 4(3) \\ &= 12 \end{aligned}$$

$$\begin{aligned} \text{Area of Square} &= s^2 \\ &= 3^2 \\ &= 9 \end{aligned}$$



StudyTip

Modeling When writing an expression to model a situation, begin by identifying the important quantities and their relationships.



2 Write Algebraic Expressions

Another important skill is translating verbal expressions into algebraic expressions.

KeyConcept Translating Verbal to Algebraic Expressions

Operation	Verbal Phrases
Addition +	more than, sum, plus, increased by, added to , and , filling
Subtraction -	less than, subtracted from, difference, decreased by, minus , draining
Multiplication ×	product of, multiplied by, times, of , Per , each
Division ÷	quotient of, divided by
Equal to (=)	is , same as

Example 1 Write and Solve Multi-Step Equations

Mrs. Hill is designing a rectangular vegetable garden for her backyard. The width of the garden is $11\frac{1}{2}$ feet shorter than twice its length.

If the perimeter of the garden is 37 feet, what is the length of the garden? Write and solve an equation. Check your solution.



Example 2 Write and Solve Multi-Step Equations

Mr. Murphy's class of 20 students is going on a field trip to the science center. They will also watch the 3-D movie. Mrs. Todd's class of 15 students is going on a field trip to the art museum and will take the audio tour. Admission to the art museum is 2.5 times that of the science center's entry fee, as shown in the table.

If the total cost is the same at both the science center and the art museum, what is the entry fee per student to the science center?

Check your solution.

Science Center	Art Museum
Entry fee: $\$x$ per student	Admission: $\$2.5x$ per student
3-D movie: $\$2.50$ per student	Audio Tour: $\$1$ per student

Part A Write an equation.

Write and solve an equation for each exercise. Check your solution.

1. Mr. Reed is drawing a blueprint of a rectangular patio. The width of the patio is $40\frac{3}{4}$ feet shorter than twice its length. The perimeter of the patio is $86\frac{1}{2}$ feet. What is the length of the patio?

2. The Yearbook Club is going to an amusement park, and each of their 12 members will pay for admission and will also help pay for parking. The Robotics Club is going to a waterpark, and each of their 14 members will pay for admission and will also purchase a meal ticket. Admission to the amusement park is 1.5 times that of the waterpark's admission, as shown in the table. If the total cost is the same at both the amusement park and the waterpark, what is the admission per student to the waterpark?

Amusement Park	Waterpark
Admission: $\$1.5x$ per student	Admission: $\$x$ per student
Parking: $\$2$ per student	Meal Ticket: $\$10.50$ per student

- 3. Open Response** Arjun purchased 5 tickets to a play, each with the same price. He was also charged an online service fee of \$3.50 per ticket. Emilia purchased 3 tickets to the same play and paid twice as much for her tickets as Arjun. Emilia was also charged a service fee of \$2.75 per ticket. If they spent the same amount, what is the cost of each of the tickets Arjun purchased? Let t represent the cost of each of Arjun's tickets.

Equation:

Cost of a Ticket:

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2024

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Solve each equation. Determine whether the equation has one solution, no solution, or infinitely many solutions. (Examples 1 and 2)

1. $4(x - 8) + 12 = 2(2x - 9)$

2. $3(2k - 5) = 6(k - 4) + 9$

3. $-4y - 3 = \frac{1}{3}(12y - 9) - 8y$

4. $6(3 - 5w) = 5(4 - 2w) - 20w$

Complete each equation so that it has infinitely many solutions. (Example 3)

5. $2x - 7(x + 10) = \square x - \square$

6. $12x - x + 8 + 3x = \square x + \square$

Complete each equation so that it has no solution. (Example 4)

7. $-15x + 4x + 2 - x = \square x + \square$

8. $9(x - 4) - 5x = \square x - \square$

9. **Multiple Choice** Which of the following explains why $\frac{2}{3}(x + 3) = \frac{2}{3}(x - 6)$ has no solution?

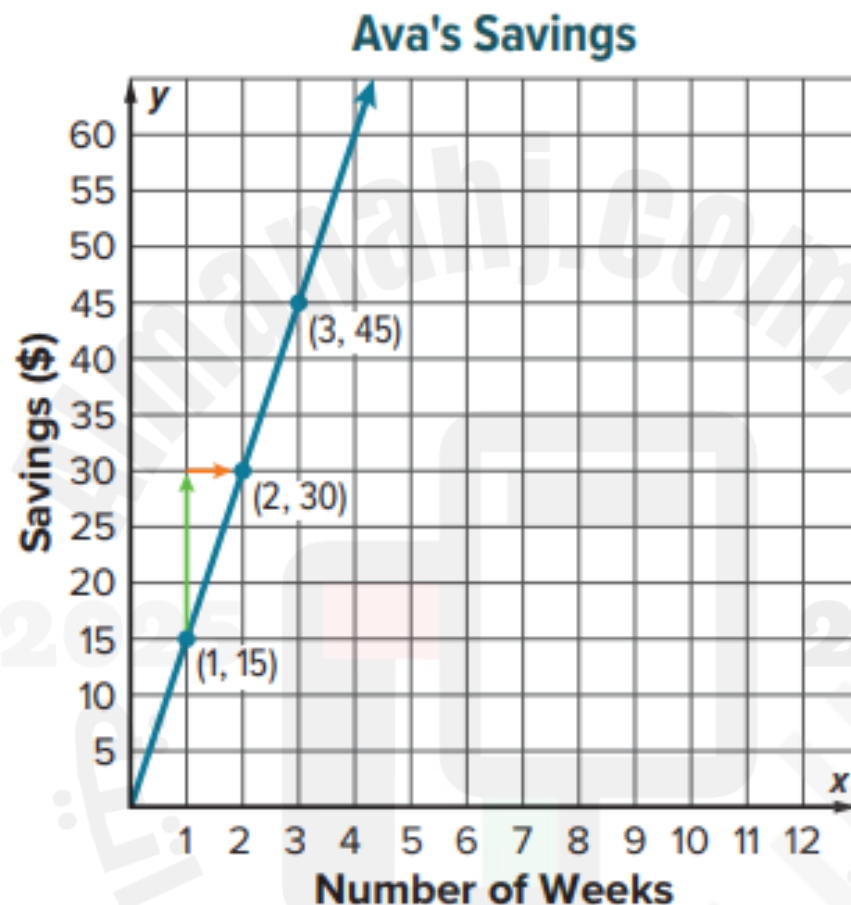
- (A) The coefficients are different, and the constants are different.
- (B) The coefficients are the same, and the constants are the same.
- (C) The coefficients are different, and the constants are the same.
- (D) The coefficients are the same, and the constants are different.

Unit 4

Example 1 Proportional Relationships and Slope

The graph shows the amount of money Ava saved over several weeks.

Find and interpret the slope.
Then find the unit rate and compare it to the slope.



Example 2 Graph Proportional Relationships

The distance y in miles that a certain cyclist can ride and the time x in hours are in a proportional relationship. This can be represented by the equation $y = 12x$.

Graph the equation. Then find and interpret the slope.

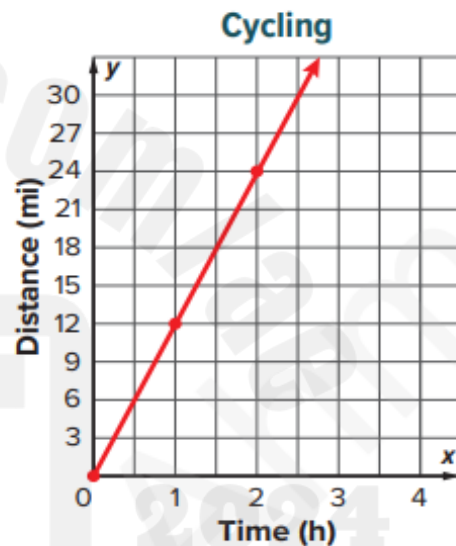
Part A Graph the equation.

Step 1 Make a table of values to find the distance for 0, 1, and 2 hours.

Hours, x	$y = 12x$	Miles, y
0	$y = 12(0)$	<input type="text"/>
1	$y = 12(1)$	<input type="text"/>
2	$y = 12(2)$	<input type="text"/>

Step 2 Graph the ordered pairs.

Graph the ordered pairs $(0, 0)$, $(1, 12)$, and $(2, 24)$ from the table. Then draw a line through the points.



Part B Find and interpret the slope.

In the equation of a proportional linear relationship $y = mx$, m represents the unit rate or slope. The equation $y = 12x$ represents the distance y in miles that the cyclist can ride in x hours.

So, the slope of the line is $\frac{12}{1}$ or 12. This means that the cyclist can ride miles per hour.

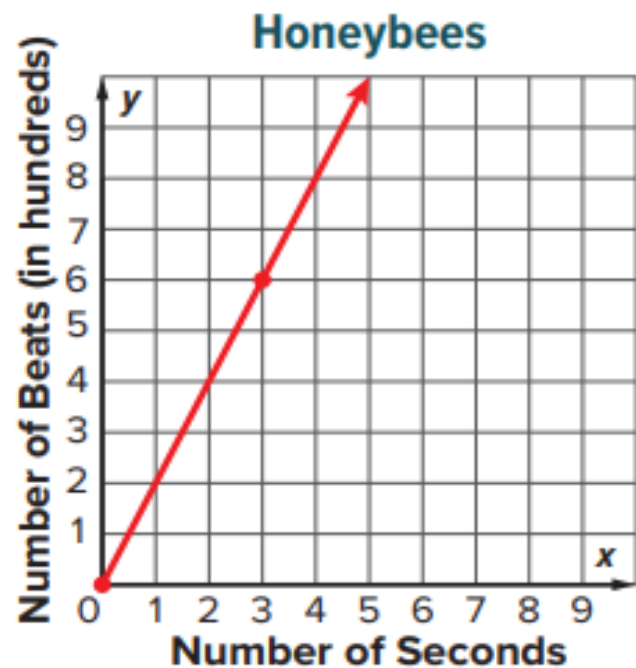
Check

The number of times y a honeybee can beat its wings and the time in seconds x are in a proportional linear relationship. This situation can be represented by $y = 200x$.

Part A

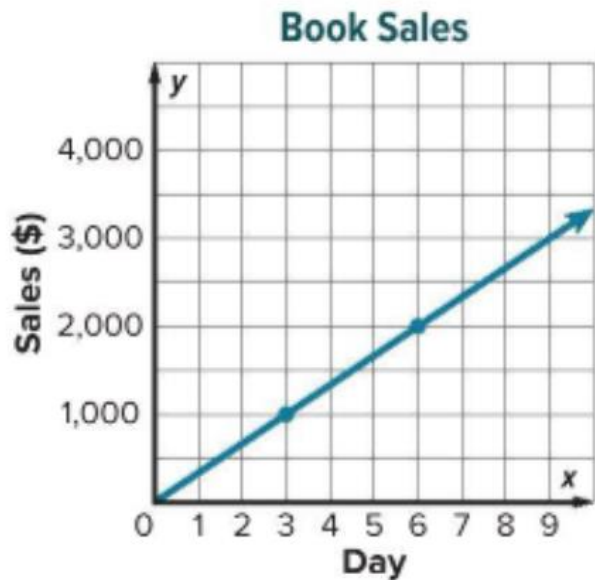
Graph the equation on the coordinate plane.

Part B Find and interpret the slope.

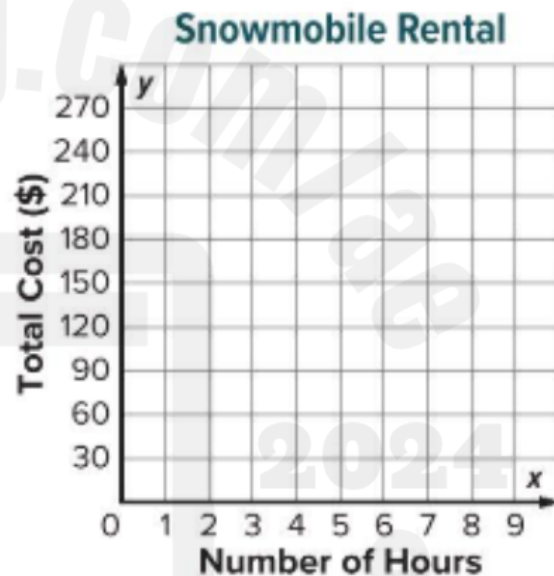


Practice..

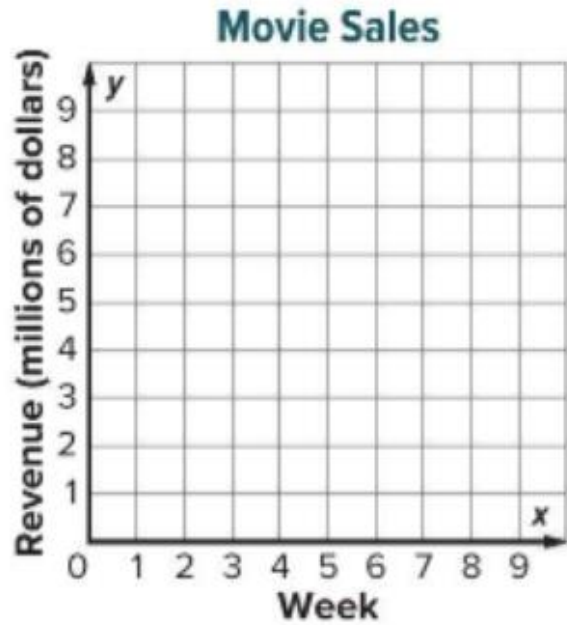
1. The graph shows the amount of book sales over several days. Find and interpret the slope. Then find the unit rate and compare it to the slope. (Example 1)



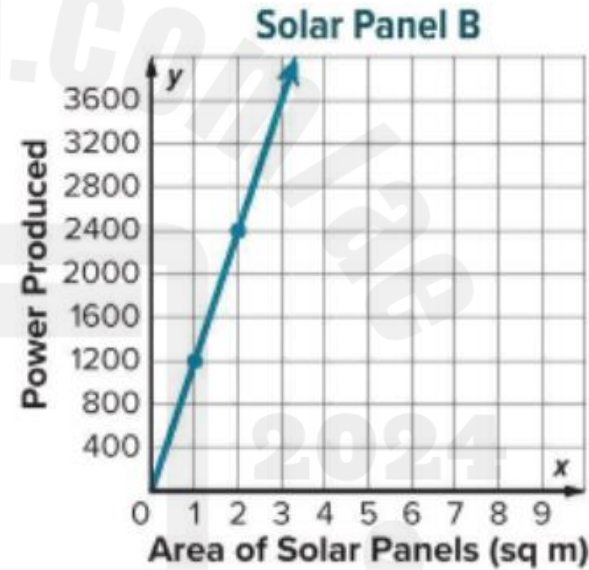
2. The cost y of renting a snowmobile for x hours is a proportional relationship. This can be represented by the equation $y = 33.75x$. Graph the equation. Then find and interpret the slope. (Example 2)



3. By the end of its fourth week, a movie had grossed \$9.2 million. Assume the revenue y in millions of dollars is proportional to the week x . Graph this relationship on the coordinate plane. Then find and interpret the slope. (Example 3)



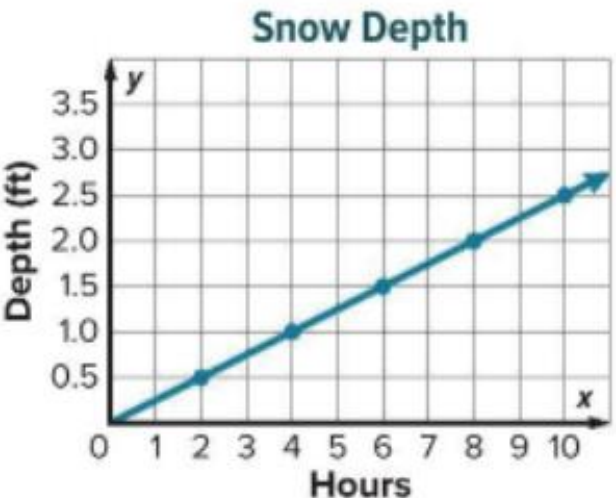
4. The amount of power y solar panel A can produce with an area of x square meters can be represented by the equation $y = 1,020x$. The amount of power a solar panel B can produce is shown on the graph. Which solar panel can produce more power? Explain. (Example 4)



Practice..

- The graph shows the depth in feet of snow after each two-hour period during a snowstorm. Find the slope of the line.

(Example 1)



- The graph shows the amount of money left after buying video games. Find the slope of the line. (Example 2)



3. The points given in the table lie on a line. Find the slope of the line. (Example 3)

x	-1	2	5	8
y	3	-1	-5	-9

Find the slope of the line that passes through each pair of points. (Examples 4–6)

4. $M(3, 5), N(2, 6)$

5. $G(-3, 2), H(7, 2)$

6. $E(6, 8), F(6, -2)$

Test Practice

7. **Multiple Choice** The points given in each table lie on lines. Which table, when graphed, would show a negative slope?

(A)

x	-2	3	8	13
y	-2	-1	0	1

(C)

x	3	5	6	8
y	8	0	-4	-12

(B)

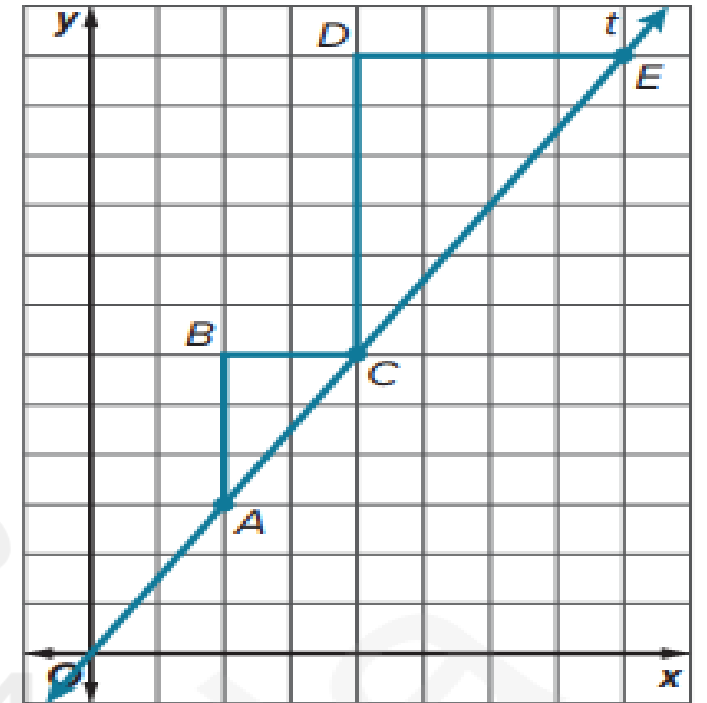
x	-1	1	3	5
y	-2	0	2	4

(D)

x	-13	-9	-5	-1
y	-4	-2	0	2

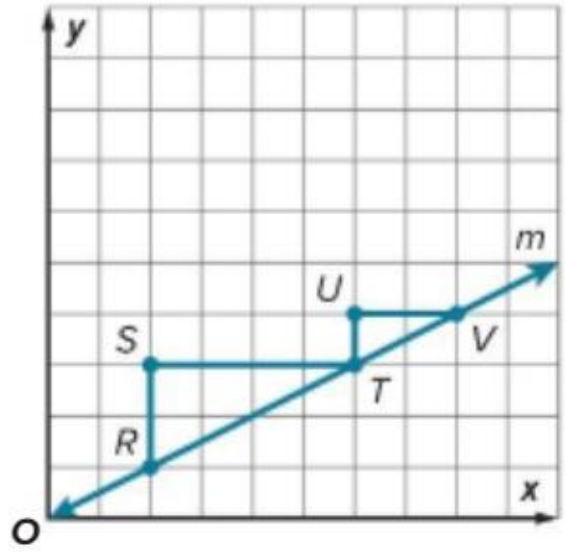
Example 1 Compare Slopes of Similar Triangles

The graph of line t is shown. Use the similar slope triangles to compare the slope of segment AC and the slope of the segment CE .

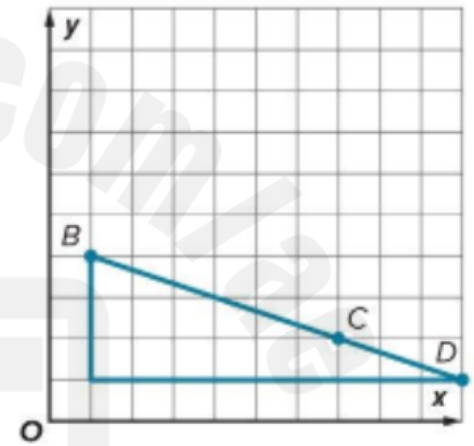


Practice..

1. The graph of line m is shown. Use the similar slope triangles to compare the slope of segment RT and TV . (Example 1)

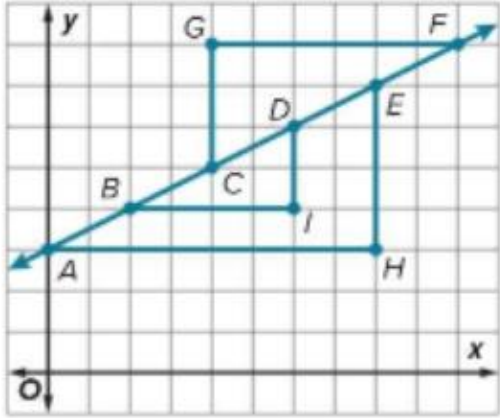


2. The plans for a zipline are shown. Use two points to determine the slope of the zipline. Then verify that the slope is the same by choosing a different set of points. (Example 2)

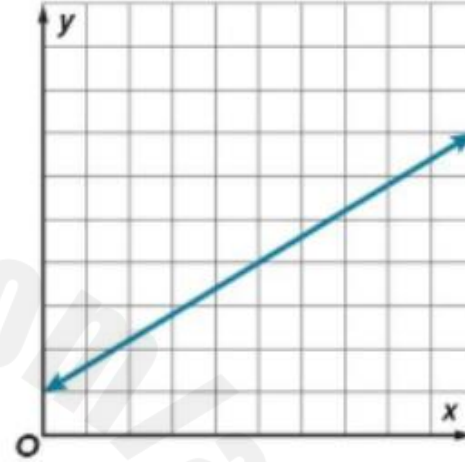


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3. Name the slope triangles shown in the graph. What is the slope of the line?



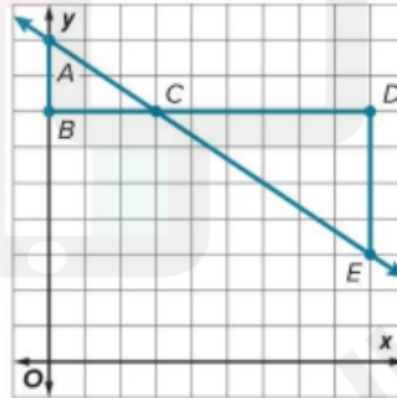
4. Draw two slope triangles on the line. Determine the slope of the line.



Test Practice

5. **Multiselect** The graph shows similar slope triangles on a line. Select all of the statements that are true.

- The slope of the line is negative.
- The slopes of each triangle are the same because they lie on the same line.
- Triangle *CDE* has a greater slope because the triangle is larger.
- The slope of each triangle is $\frac{2}{3}$.
- The slope of the line is positive.



6. Water pressure is measured in pounds per square inch (psi). The number of pounds per square inch y varies directly with the depth x of the water. Write and solve a direct variation equation to determine what the pressure is at a depth of 297 feet.

Depth (ft), x	Pressure (psi), y
66	29
99	43.5
132	58

7. A backyard fountain pumps 18 gallons of water in 4.5 minutes. Assume the number of gallons varies directly with the time. Write and solve a direct variation equation to find how many gallons of water the fountain pumps in 6.5 minutes.

8. Write three ordered pairs that would be found on the line that is graphed by the direct variation equation $y = 3.5x$
9. The graph of a relationship passes through the points $(2, 15.5)$ and $(3, 27)$. Determine if this is a direct variation relationship. Explain why or why not.

10. **Find the Error** The cost of apps varies directly with the number of apps purchased. Aditi bought four apps for a total of \$5.16. She found the direct variation equation below for this relationship. Find her mistake and correct it.

11. How does a constant of variation in a direct variation equation relate to the unit rate?