# EOT Coverage Term 1

موقع المناهج ⇐ المناهج الإماراتية ⇐ رياضيات ⇐ الفصل الأول ⇐ ملفات متنوعة ⇐ الملف

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| المزيد من مادة رياضيات: | ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل ا منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس |
| | إعداد: مدرسة المسيرة |

## التواصل الاجتماعي بحسب

| صفحة المناهج الإماراتية على فيسبوك | | | | |
|---|---|---|---|---|

| المواد على تلغرام | التربية الاسلامية | اللغة العربية | اللغة الانجليزية | الرياضيات |
|---|---|---|---|---|

## المزيد من الملفات بحسب والمادة رياضيات في الفصل الأول

# EOT Coverage Term 1

## Gr-8 GEN -2024-2025

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

# EOT T1 Exam Coverage Grade 8 GEN 2024-2025

| Question*<br>السؤال* | Learning Outcome/Performance Criteria**<br>نتائج التعلم/ معايير الأداء** | Reference(s) in the Student Book (Arabic Version)<br>المرجع في كتاب الطالب (النسخة العربية) | |
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# 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 $y = \frac{3}{4}$.
(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.

- $\square$ $(-9)^4$
- $\square$ $\left(-\frac{4}{5}\right)^3$
- $\square$ $3^5 - 10^4$
- $\square$ $(9.8)^2 - 10^2$
- $\square$ $\left(-\frac{3}{8}\right)^2$

## 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 $\dfrac{b^{12}}{b^5}$. (Example 4)

6. Simplify $\dfrac{5^5 \cdot 6^3 \cdot 8^{10}}{5^3 \cdot 6 \cdot 8^9}$. (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 $\dfrac{45x^{15}}{9x^{10}}$. (Example 7)

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

**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.

☐ $(x^3 y^4)^2$

☐ $(x^2 y)^2$

☐ $(x^3)^2 y^6$

☐ $x^6 (y^4)^2$

☐ $(x^3)^2 (y^2)^4$

**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. $\dfrac{1}{d^6} =$ _____

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

## 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.** $\dfrac{x^{-8}}{x^{-12}} =$ _____

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

**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.

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

# 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.** $0.0000000642 =$ _____
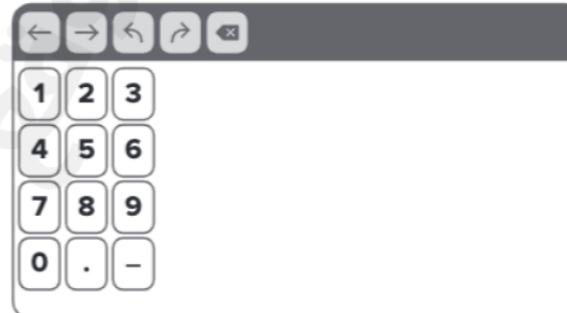
**7.** A common race is a 5K race, where runners travel 5 kilometers. Is it more appropriate to report the distance as 5 kilometers or $5 \times 10^6$ millimeters? Explain your reasoning. (Example 6)

**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 $5.98 \times 10^{24}$ kilograms. When this number is written in standard notation, how many zeros are in the number?

1. There are about $3 \times 10^{11}$ 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 $2.1875 \times 10^{-3}$ 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 $1.86 \times 10^5$ miles per second. The star Sirius is about $5.062 \times 10^{13}$ 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 | $1.46 \times 10^4$ |
| North | $2.38 \times 10^4$ |
| South | $6.75 \times 10^3$ |
| 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... 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 |
|:---:|:---:|:---:|
| $\frac{2}{5}$ | | |
| $\frac{5}{6}$ | | |

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

$$0.64000...,\qquad 0.\overline{56},\qquad 0.4242...,$$

$$0.84,\qquad 0.333...,\qquad 0.7$$

Repeating Decimals

Terminating Decimals

Terminates in Zeros     Does Not Terminate in Zeros
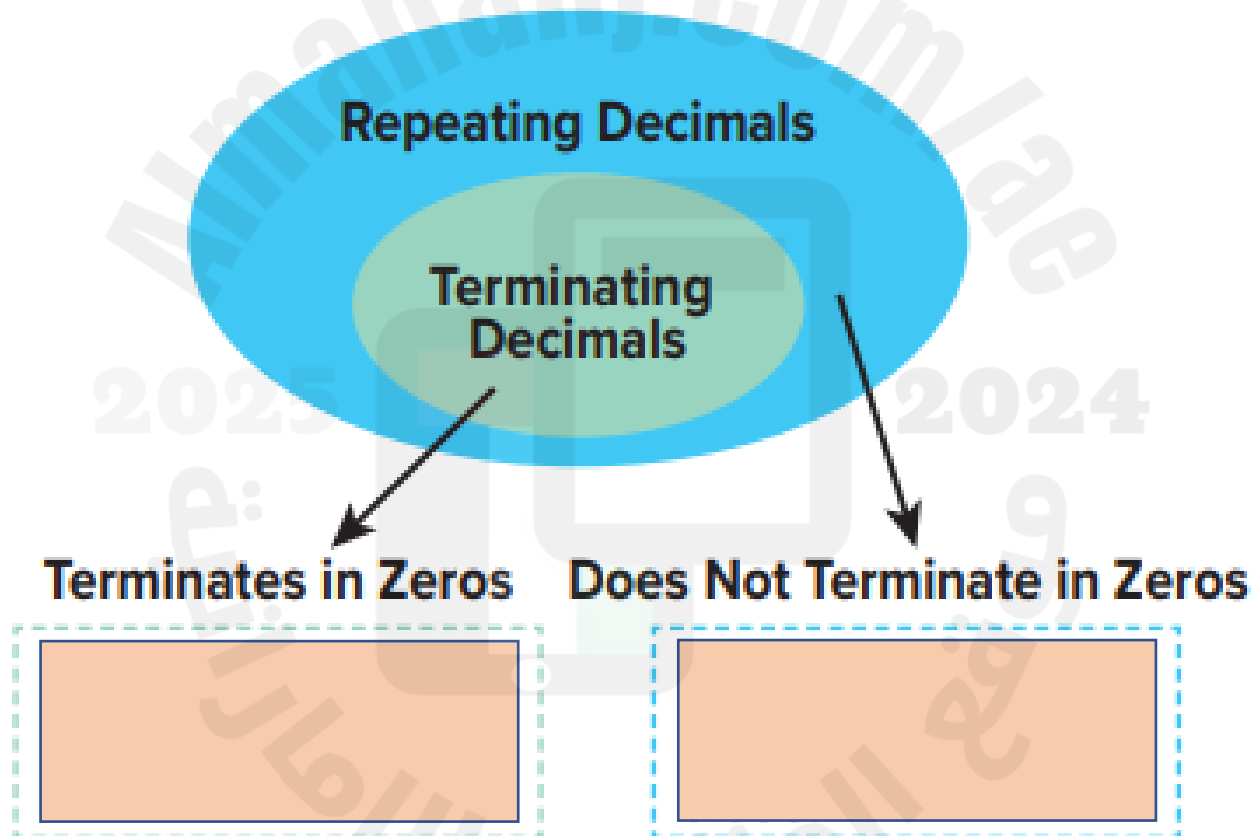
Write each rational number in decimal form. Then determine whether the decimal is a terminating decimal. (Examples 1 and 2)

**1.** $-\dfrac{11}{16} =$ _____

**2.** $\dfrac{5}{33} =$ _____

**3.** $4\dfrac{3}{8} =$

**4.** $-9\dfrac{11}{30} =$

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

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

**6.** $-0.\overline{18} =$ _____

**7.** $-1.\overline{5} =$ _____

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

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

**10.** Phoebe won $\dfrac{7}{16}$ of the competitions she entered. Write $\dfrac{7}{16}$ 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.

☐ $-\dfrac{11}{5}$      ☐ $\dfrac{1}{50}$

☐ $\dfrac{1}{225}$      ☐ $\dfrac{7}{26}$

☐ $\dfrac{5}{16}$      ☐ $-\dfrac{3}{32}$

**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{\dfrac{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)**

**Test Practice**

**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?

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

$$p^3 = -0.027$$
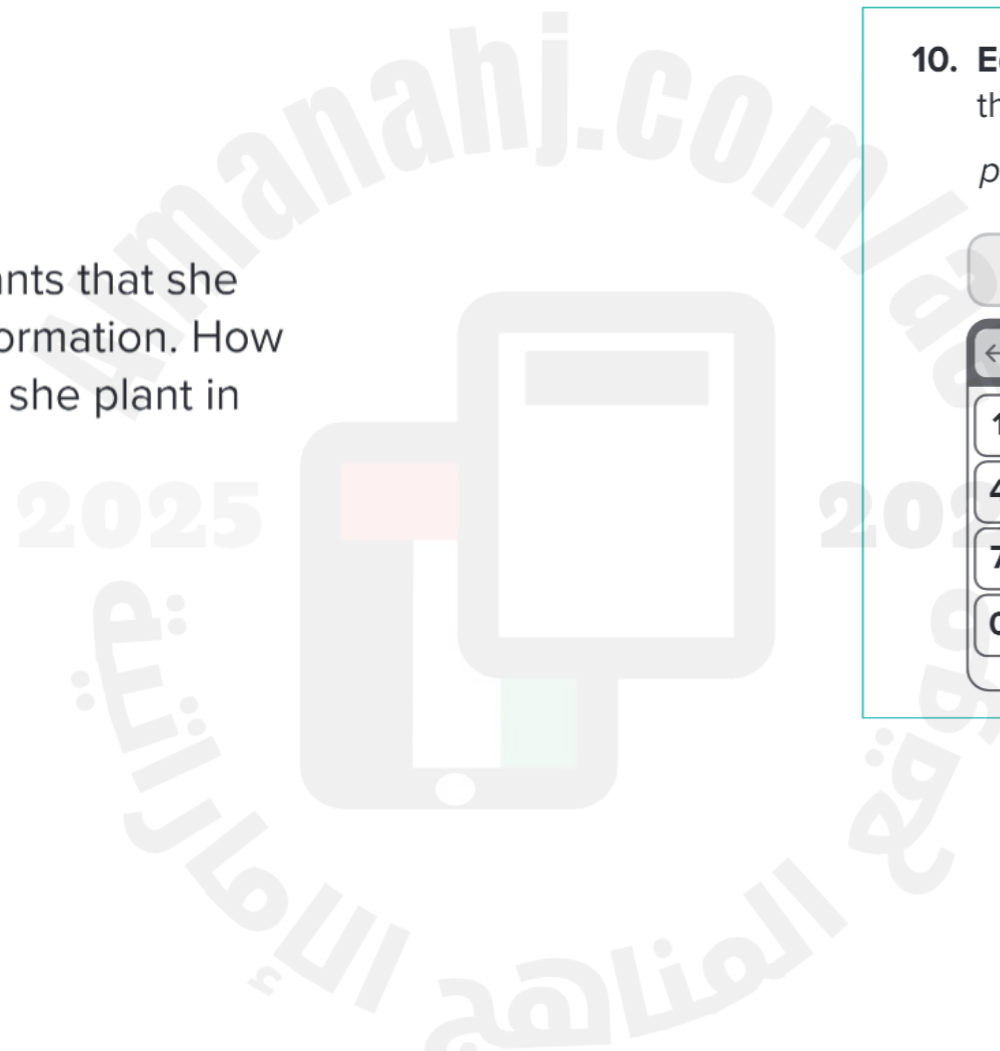
**Identify whether each number is *rational* or *irrational*.** (Example 1)

1. $-\sqrt{10}$

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

3. $0.\overline{3}$

4. $\sqrt{81}$

5. $0$

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

7. $\sqrt{7}$

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

**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. $\dfrac{7}{\sqrt{2}}$

(A) Rational

(B) Irrational

(C) Integer

(D) Whole

(E) Natural

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

(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.

$\sqrt{489}$

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

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


3.2  3.3  3.4  3.5  3.6  3.7

**2.** $\sqrt{3}$ _____ $\dfrac{\sqrt{10}}{2}$


1.4  1.5  1.6  1.7  1.8  1.9

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


−10  −9.9  −9.8  −9.7  −9.6  −9.5

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


−3.6  −3.5  −3.4  −3.3  −3.2  −3.1
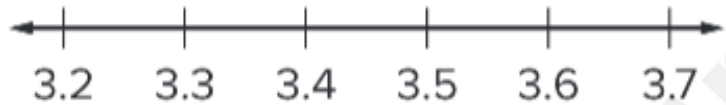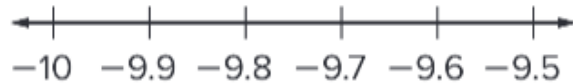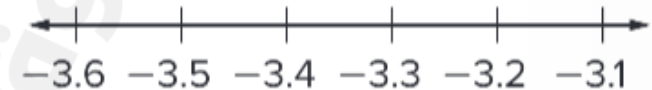
**5.** Order the set $\left\{3\frac{1}{2}, \frac{10}{3}, \pi, \sqrt{13}\right\}$ from least to greatest. Then graph the set on the number line. (Example 3)



3.1    3.2    3.3    3.4    3.5    3.6    3.7

**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 |
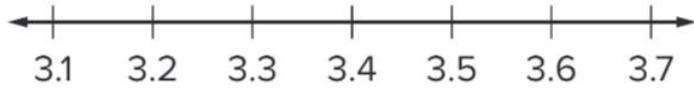
**Test Practice**

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

$$\sqrt{27} \underline{\quad} \frac{\sqrt{95}}{2}$$

(A) <

(B) >

(C) =

(D) ≤

# Unit 3

**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.**

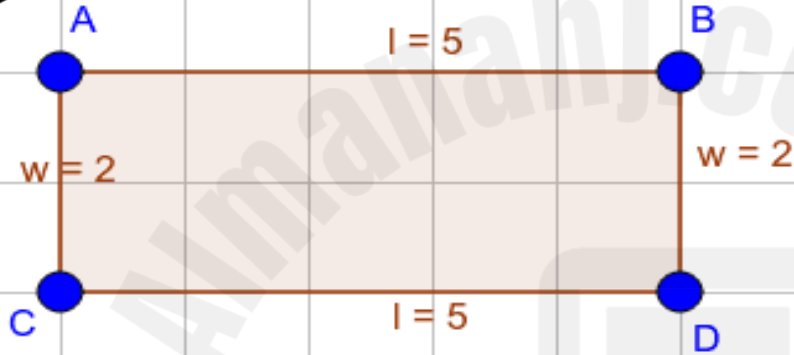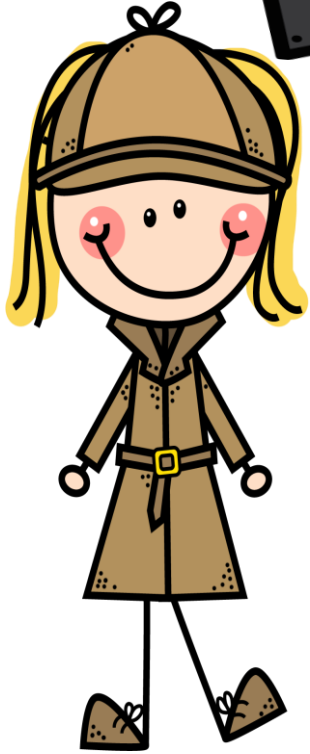**5.** $\frac{1}{2}(-4 + 6n) = \frac{1}{3}n + \frac{2}{3}(n + 9)$

**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**

Or    P = 2L +2W

= 2(5) +2(2)

= 10 + 4

= 14

**Perimeter**

**Area**

A                    l = 5                    B

w = 2                                         w = 2

C                    l = 5                    D
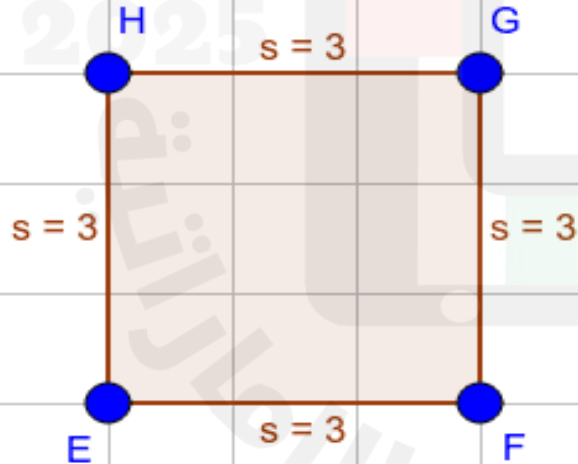
**Perimeter of Rectangle**
= 2(w+l)
= 2(2+5)
= 14

**Area of Rectangle**
= l*w
= 2*5
= 10

H          s = 3          G

s = 3                    s = 3

E          s = 3          F

**Perimeter of Square**
= 4s
= 4(3)
=12

**Area of Square**
= s²
= 3²
= 9

## 2 Write Algebraic Expressions

Another important skill is translating verbal expressions into algebraic expressions.

**Key**Concept   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: [                    ]

**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.** $2x - 7(x + 10) = \boxed{\phantom{0}}\, x - \boxed{\phantom{0}}$

**6.** $12x - x + 8 + 3x = \boxed{\phantom{0}}\, x + \boxed{\phantom{0}}$

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

7. $-15x + 4x + 2 - x = \boxed{\phantom{0}}\, x + \boxed{\phantom{0}}$

8. $9(x - 4) - 5x = \boxed{\phantom{0}}\, x - \boxed{\phantom{0}}$

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

Ⓐ The coefficients are different, and the constants are different.

Ⓑ The coefficients are the same, and the constants are the same.

Ⓒ The coefficients are different, and the constants are the same.

Ⓓ 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.**

**Ava's Savings**



Savings ($) vs Number of Weeks

Points: (1, 15), (2, 30), (3, 45)
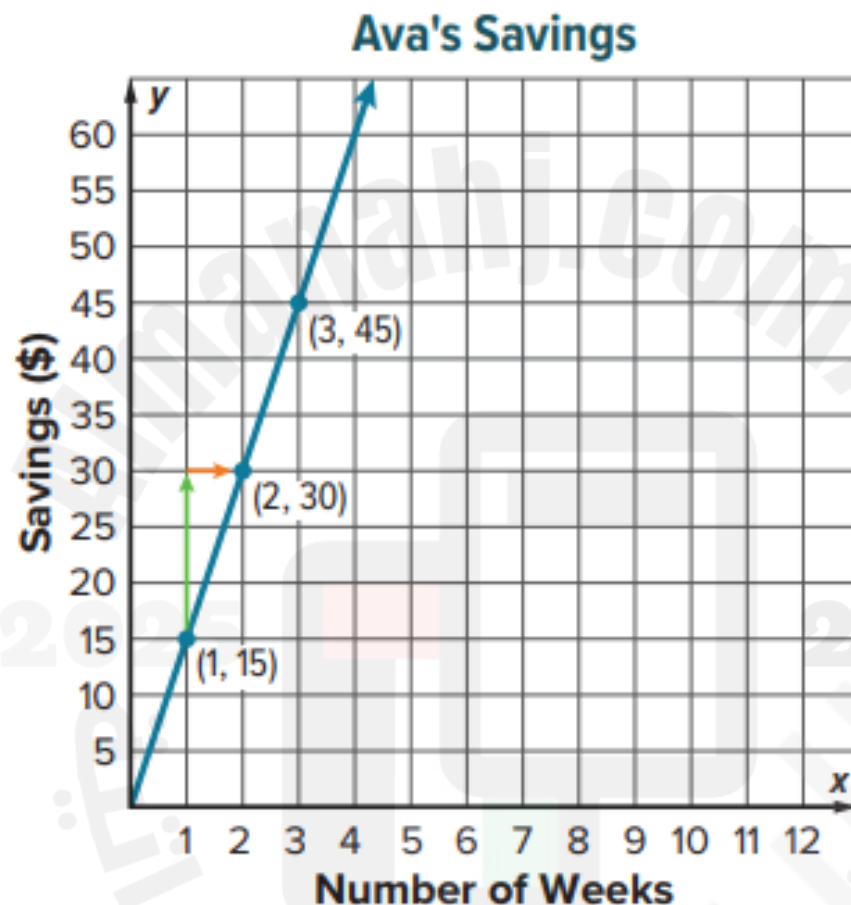
# 🌐 Example 2 Graph Proportional Relationships

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 | $y = 12(0)$ | |
| 1 | $y = 12(1)$ | |
| 2 | $y = 12(2)$ | |

**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.



Cycling
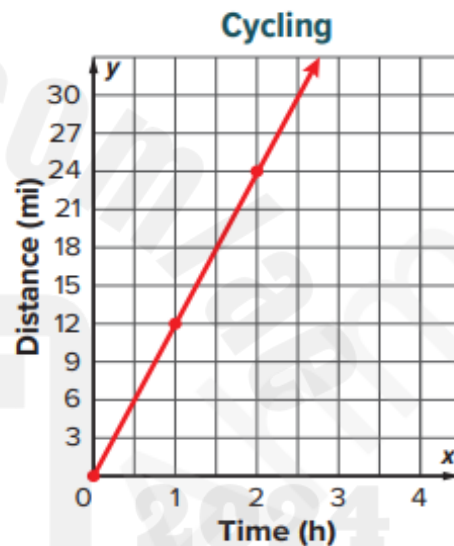
**Part B** Find and interpret the slope.

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 $y = 200x$.
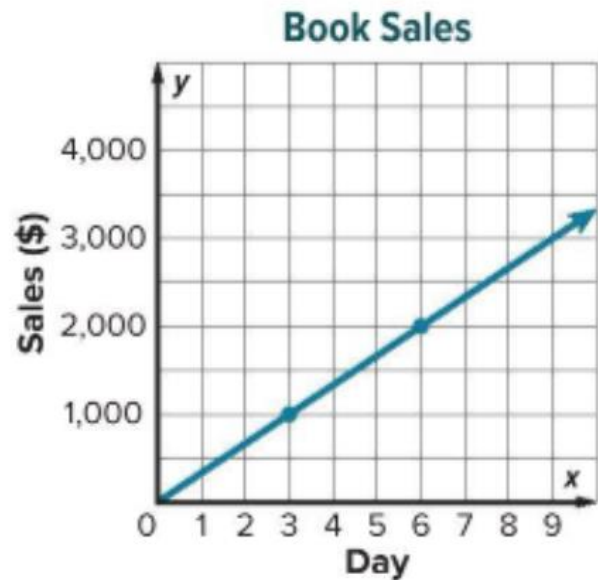
**Part A**

Graph the equation on the coordinate plane.

**Honeybees**



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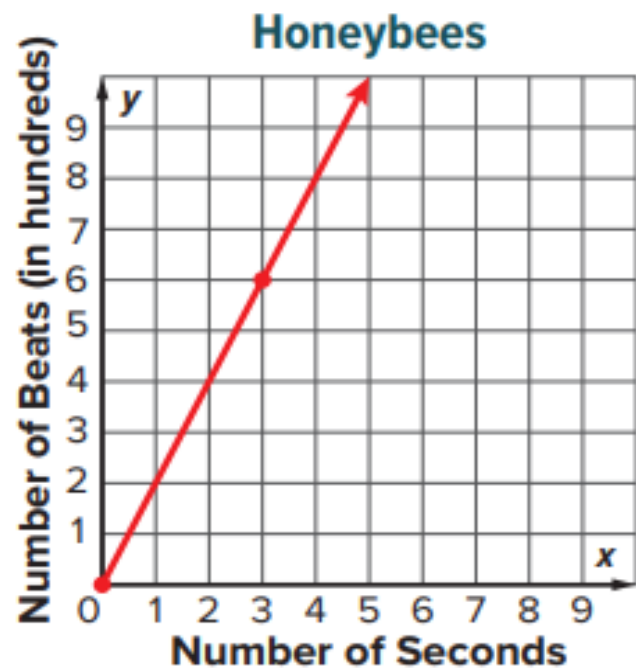
**1.** The graph shows the amount of book sales over several days. Find and interpret the slope. Then find the unit rate and compare it to the slope. **(Example 1)**

**Book Sales**



**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)**

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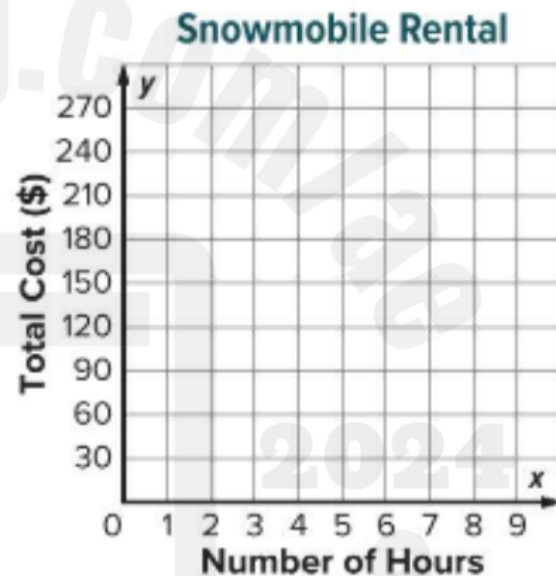
**3.** By the end of its fourth week, a movie had grossed $9.2 million. Assume the revenue $y$ in millions of dollars is proportional to the week $x$. Graph this relationship on the coordinate plane. Then find and interpret the slope. (Example 3)

**Movie Sales**
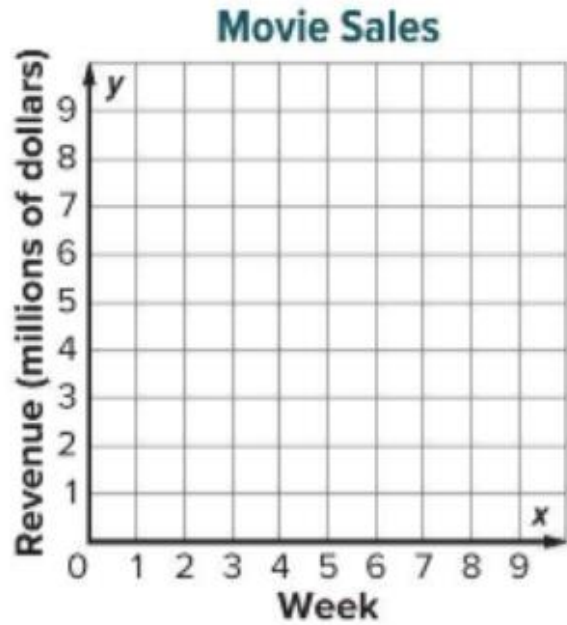


**4.** The amount of power $y$ solar panel A can produce with an area of $x$ square meters can be represented by the equation $y = 1,020x$. The amount of power a solar panel B can produce is shown on the graph. Which solar panel can produce more power? Explain. (Example 4)
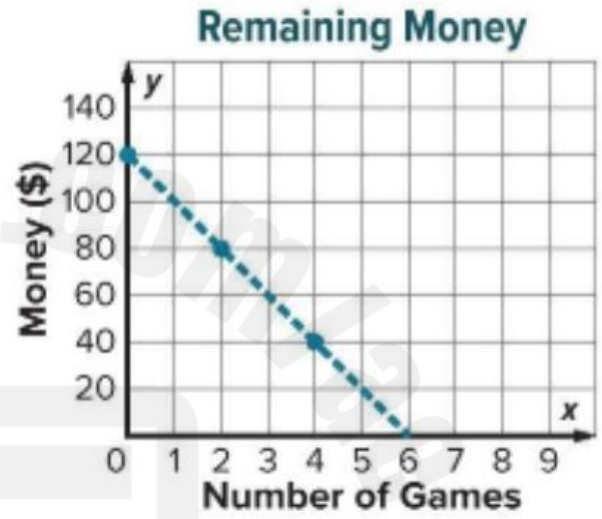
**Solar Panel B**
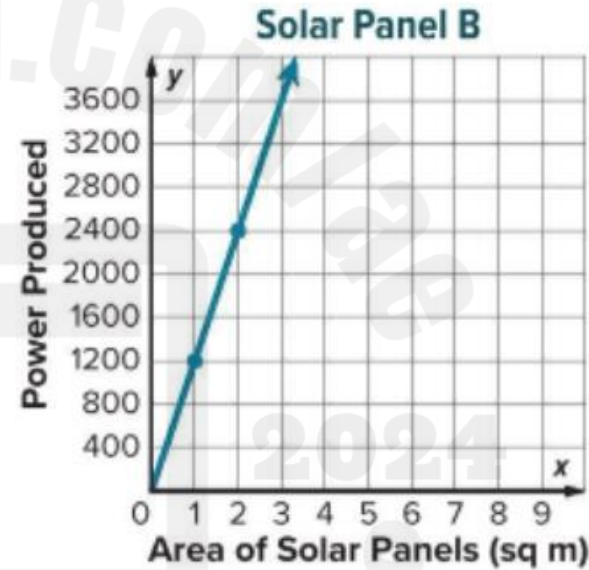
1. The graph shows the depth in feet of snow after each two-hour period during a snowstorm. Find the slope of the line. (Example 1)

**Snow Depth**
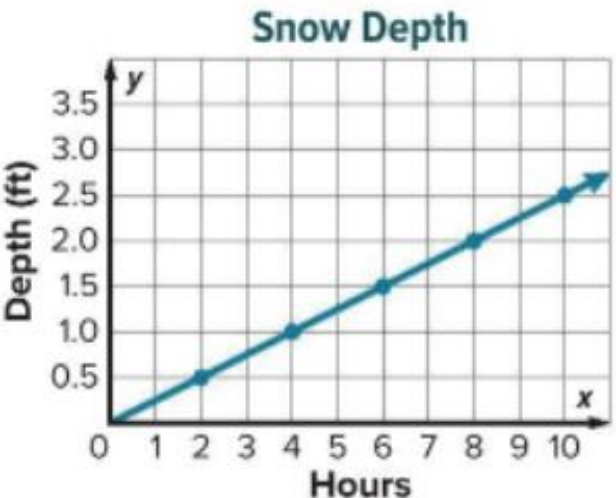


2. The graph shows the amount of money left after buying video games. Find the slope of the line. (Example 2)

**Remaining Money**

**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?

Ⓐ

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

Ⓒ

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

Ⓑ

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

Ⓓ

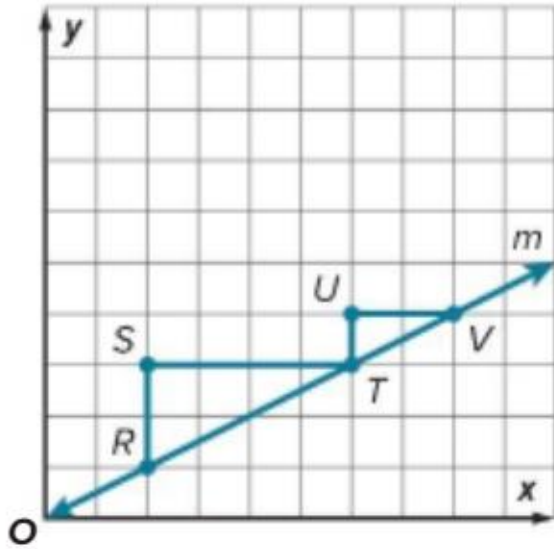| x | −13 | −9 | −5 | −1 |
|---|---|---|---|---|
| y | −4 | −2 | 0 | 2 |

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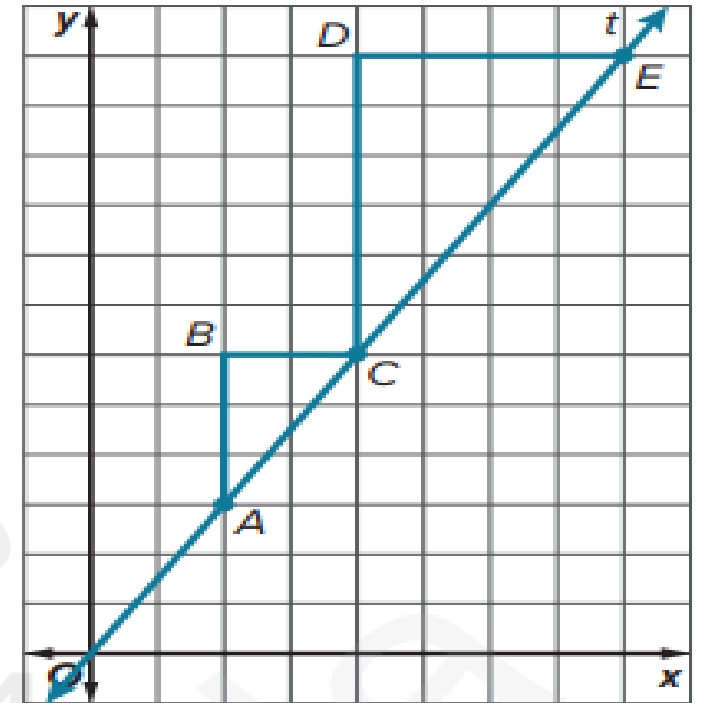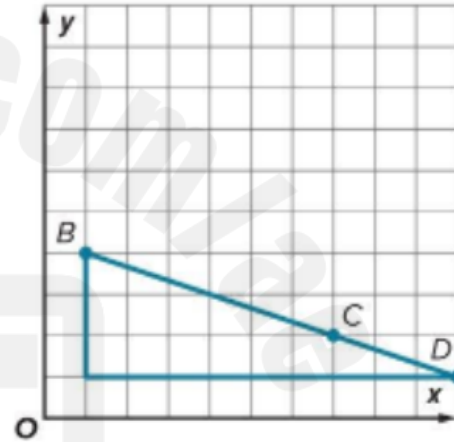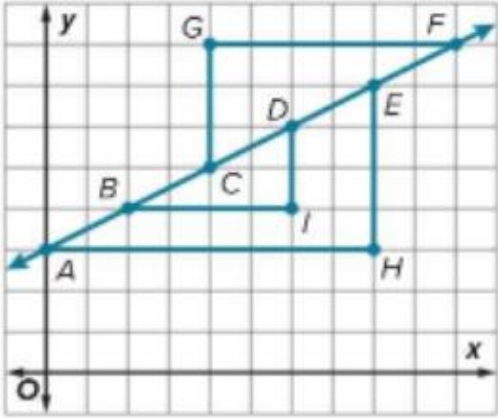
**1.** The graph of line *m* is shown. Use the similar slope triangles to compare the slope of segment *RT* and *TV.* (Example 1)



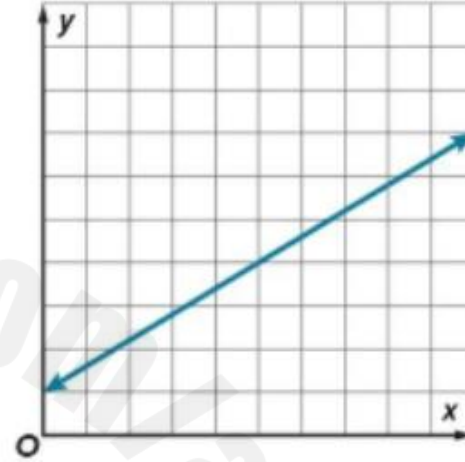**2.** The plans for a zipline are shown. Use two points to determine the slope of the zipline. Then verify that the slope is the same by choosing a different set of points. (Example 2)

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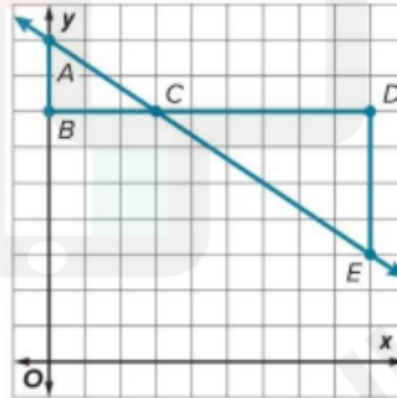
6. Water pressure is measured in pounds per square inch (psi). The number of pounds per square inch $y$ varies directly with the depth $x$ of the water. Write and solve a direct variation equation to determine what the pressure is at a depth of 297 feet.

| 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?