هيكل تغطية اختبار نهاية الفصل





تم تحميل هذا الملف من موقع المناهج الإماراتية	
موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الثامن ⇦ رياضيات ⇦ الفصل الأول ⇦ ملفات متنوعة ⇦ الملف	
تاريخ إضافة الملف على موقع المناهج: 2026-11-15 14:03:23	
ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس	المزيد من مادة رياضيات:
إعداد: Alrashedi Laila	

التواصل الاجتماعي بحسب الصف الثامن					
صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

المزيد من الملفات بحسب الصف الثامن والمادة رياضيات في الفصل الأول	
1	المتقدم الثامن G8 Adv T1 EOT
2	هيكل اختبار نهاية الفصل
3	هيكل مراجعة وأسئلة تدريبية
4	عرض بوربوينت ملزمة هيكل ريفيل ثامن عام
5	عرض بوربوينت ملزمة هيكل ريفيل ثامن متقدم الجزء الورقي

تحميل تطبيق المناهج للهواتف الذكية	
تطبيق المناهج على Store App (آبل)	تطبيق المناهج على Play Google (أندرويد)



Alshyiam School C2 & 3

Math Department

EOT Coverage Term 1

2006-2007

Gr-8 GEN

Done by:
Laila Alrashedi

School Principal:
Noura AlGaithi

UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

الإمارات العربية المتحدة
وزارة التربية والتعليم

End of Term 1 Exam Coverage	هيكل اختبار نهاية الفصل الدراسي الأول
Grade 8 General - Mathematics	**الصف الثامن - عام - الرياضيات**
Academic Year 2026-2027	العام الدراسي 2026-2027
Reveal	ريفيل

عدد الأسئلة Number of questions	درجة السؤال Marks per question	الدرجة القصوى الممكنة Maximum overall grade
26	**MCQ (2-4)** **FRQ (5-8)**	**100**

مدة الاختبار Exam duration	طريقة التطبيق Mode of implementation	الآلة الحاسبة Calculator
150 دقيقة **150 minutes**	**إلكتروني وورقي** **Electronic & Paper**	**يُمنع استخدام الآلة الحاسبة** **The use of a calculator is not allowed**

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EOT T1 Exam Coverage Grade 8 GEN 2026-2027

Unit	Lesson	Q #	Learning outcomes	Exercise	page
1	L1.1 Powers and exponents	Q2 Q22	Use integer exponents to show repeated multiplication of rational numbers	1&2 (اختيار من متعدد) 5-9 (كتابي - مقالي)	11
	L1.2 Multiply and Divide Monomials	Q3 Q4	Use the Laws of Exponents to multiply and divide monomials with common bases	1-4 (اختيار من متعدد) 5-8 (اختيار من متعدد)	23
	L1.3 Powers of Monomials	Q5	Use the Power of a Power Property and the Power of a Product Property to simplify expressions with integer exponents	1-6 (اختيار من متعدد)	31
	L1.4 Zero and Negative Exponents	Q21	Use the Zero Exponent Rule and the Quotient of Powers Property to simplify expressions with zero and negative integer exponents	3-10 (كتابي - مقالي)	41
	L1.5 Scientific Notation	Q6	Write very large and very small numbers using scientific notation	1-6 (اختيار من متعدد)	53
	L1.6 ملغي				

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EOT T1 Exam Coverage Grade 8 GEN 2026-2027

2	L2.1 Terminating and Repeating decimals	Q1	Show how the decimal form of a rational number of repeats eventually	1-4 (اختيار من متعدد)	77
	L2.2 Roots	Q8 Q7	-Find square and cube roots -Use square and cube roots to solve equations involving perfect squares and cubes	1-7 (اختيار من متعدد) 8-10 (اختيار من متعدد)	89
	L2.3 Real Numbers	Q9	Identify irrational numbers and name the set(s) of real numbers to which a given real number belongs	1-11 (اختيار من متعدد)	99
	L2.4 Estimate irrational numbers	Q23	Estimate irrational numbers by approximating their locations on a number line or by truncating their decimal expansions	1-8 (كتابي - مقالي)	109
	L2.5 Compare and order real numbers	Q20	Use rational approximations to compare and order real numbers, including irrational numbers	1-7 (كتابي- مقالي)	121

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3	L3.1 Solve equations with variables on each sides	Q24	Use the properties of equality to solve equations with variables on each side that have rational coefficients	1-8 (كتابي - مقالي)	135
	L3.2 Write and solve equations with variables both sides	Q14	Write linear equations in one variable with rational coefficients and use the properties of equality to solve them	1-4 (اختيار من متعدد)	143
	L3.3 Solve multi-step equations	Q 10	Solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms	1-4 (اختيار من متعدد)	149
	L3.4 Write and solve multi-step equations	Q11	Write and solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms	Example 1 (اختيار من متعدد) Example 2 (اختيار من متعدد)	152 153

EOT T1 Exam Coverage Grade 8 GEN 2026-2027

	L4.1 Proportional relationships and slope	Q15	Graph and compare proportional relationships using words, equations, and tables and interpret the unit rate as the slope of the line	1 and 2 (اختيار من متعدد)	189
	L 4.2 Slope of the line	Q16		Learn (اختيار من متعدد)	191 192
4		Q17	Identify the slope of a line and interpret it as the rate of change within the context of the problem	(اختيار من 1-6 متعدد)	203
	L4.3 ملغي				
	L4.4 Direct variation	Q26	Derive the equation y = mx from the slope formula and use direct variation equations to represent and solve real-world and mathematical problems	Learn (كتابي- مقالي) 1-4 (كتابي - مقالي)	213 223
	L4.5 Slope intercept form	Q18 Q 25	Write equations of the form y = mx + b when given a table, graph, or verbal description	1-6 (اختيار من متعدد) 1-7 (كتابي – مقالي)	235 235
	L4.6 Graph linear equations	Q19	Interpret the slope and y-intercept of a line from an equation of the form y = mx + b in order to graph the line on the coordinate plane	1-6 (كتابي – مقالي)	245



Alshyiam School C2 & 3

Math Department

Unit 1

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Practice..

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

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

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

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)

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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.

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

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Practice..

PG. 23

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)

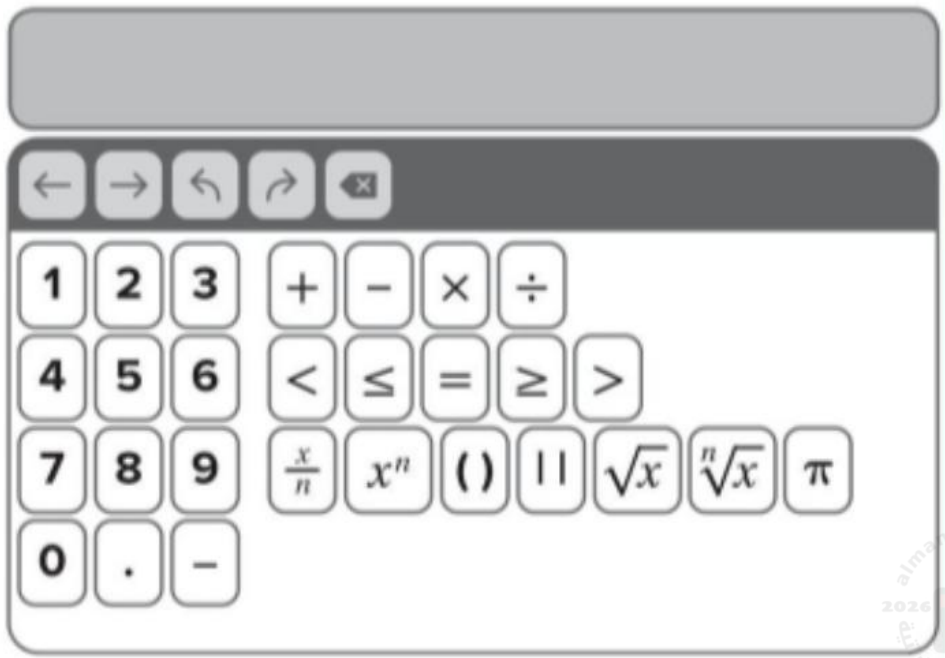
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7. A publisher sells 10^6 copies of a new science fiction book and 10^3 copies of a new mystery book. How many times as many science fiction books were sold than mystery books? (Example 5)

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

Test Practice

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



Practice..

PG. 31

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

Practice..

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

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

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Practice..

PG. 53

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 = _____

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Math Department

Unit 2

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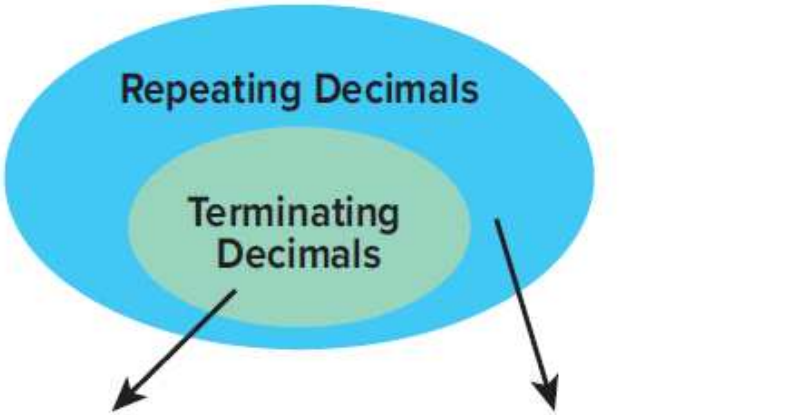
School Principal:
Noura AlGaithi

Rational Number	Repeating Decimal	Terminating Decimal
$\frac{2}{5}$	0.400...	0.4
$\frac{5}{6}$	0.833... $0.8\overline{3}$	does not terminate

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

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

0.84, 0.333..., 0.7



Terminates in Zeros	Does Not Terminate in Zeros
0.64000. . . 0.84 0.7	$0.\overline{56}$ 0.4242. . . 0.333. . .

Practice..

PG. 77

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

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Practice..

PG. 89

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

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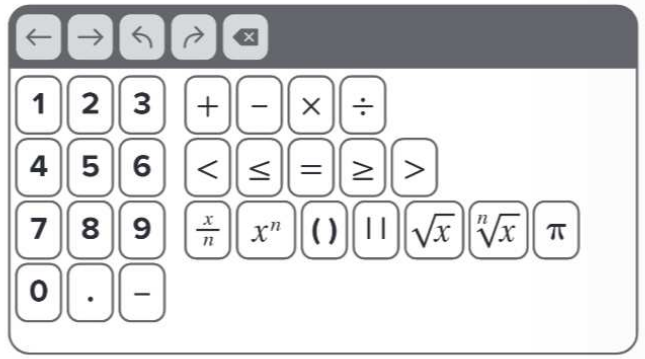
8. A basin of a water fountain is cube shaped and has a volume of 91.125 cubic feet. Solve $s^3 = 91.125$ to find the length s of one side of the basin. (Example 8)

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?

$p^3 = -0.027$



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Practice..

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

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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

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Practice..

PG.109

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. $\sqrt{62} \approx$ _____

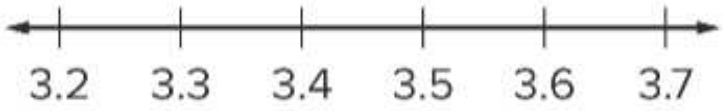
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Practice..

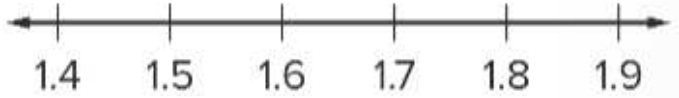
PG.121

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

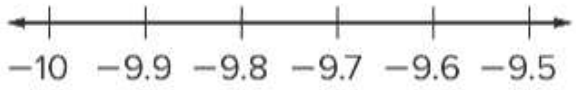
1. $\sqrt{11}$ _____ $3\frac{2}{3}$



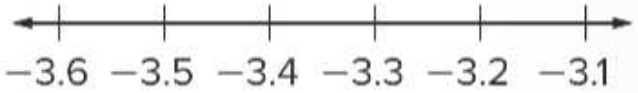
2. $\sqrt{3}$ _____ $\frac{\sqrt{10}}{2}$



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



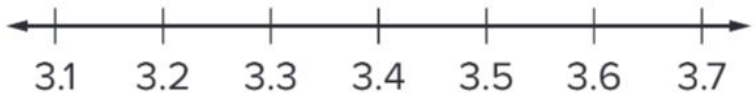
4. $-\sqrt{12}$ _____ -320%



Practice..

PG.121

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)



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.

$\sqrt{27} __ \frac{\sqrt{95}}{2}$

(A) $<$

(B) $>$

(C) $=$

(D) $\leq$



Alshyiam School C2 & 3

Math Department

Unit 3

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Practice..

PG.135

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

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PG.135

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.

$3x - 15 = 17 - x$

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Practice..

PG.143

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?

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PG.143

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?

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Practice..

PG.149

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

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PG.152-153

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.

Part A Write an equation.

Let ℓ represent the length, in feet, of the garden. The width of the garden is twice the length minus $11\frac{1}{2}$ feet. So, the expression $2\ell - 11\frac{1}{2}$ represents the width of the garden.

Write an equation that models the perimeter.

$$P = 2\ell + 2w$$

$$37 = 2\ell + 2\left(2\ell - 11\frac{1}{2}\right)$$

Part B Solve the equation.

$37 = 2\ell + 2\left(2\ell - 11\frac{1}{2}\right)$	Write the equation.
$37 = 2\ell + 4\ell - 23$	Distributive Property
$37 = 6\ell - 23$	Combine like terms.
$+23 = \quad +23$	Addition Property of Equality
$60 = 6\ell$	Simplify.
$\frac{60}{6} = \frac{6\ell}{6}$	Division Property of Equality
$10 = \ell$	Simplify.

So, the length of the garden is 10 feet.

Check the solution.

Length: 10 feet

Width: $2\ell - 11\frac{1}{2} = 2(10) - 11\frac{1}{2}$ or 8.5 feet

Perimeter: $2\ell - 2w = 2(10) + 2(8.5)$ or 37 feet

PG.152-153

Check

The hallway in Oscar's house is in the shape of a rectangle. The length of the hallway is $\frac{1}{2}$ foot longer than twice its width. The perimeter of the hallway is 31 feet.

Part A

Which equation(s) can be used to find the width w of the hallway? Select all that apply.

- ☐ $31 = \frac{1}{2} + 4w$
- ☑ $31 = 1 + 6w$
- ☐ $31 = 2 + 2w$
- ☑ $31 = 2\left(\frac{1}{2} + 2w\right) + 2w$
- ☐ $31 = \frac{1}{2} + 2w$
- ☑ $31 = 2\left(\frac{1}{2} + 3w\right)$

Part B

What is the width of the hallway?

Show your work here

5 feet

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PG.152-153

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.

Let x represent the cost of the entry fee per student to the science center. The cost of the trip to the science center can be represented by the expression $(x + 2.50)$ for each student to pay the entry fee and 3-D movie. The cost of the trip to the Art Museum can be represented by the expression $(2.5x + 1)$ for admission and the audio tour for each student. Complete the equation that models the total cost.

$$\boxed{20}(x + 2.50) = \boxed{15}(2.5x + 1)$$

Part B Solve the equation.

$20(x + 2.50) = 15(2.5x + 1)$	Write the equation.
$\boxed{20x} + \boxed{50} = \boxed{37.5x} + \boxed{15}$	Distributive Property
$-20x \quad = -20x$	Subtraction Property of Equality
$50 = \boxed{17.5x} + 15$	Simplify.
$-15 = \quad -15$	Subtraction Property of Equality
$\boxed{35} = 17.5x$	Simplify.
$\frac{35}{\boxed{17.5}} = \frac{17.5x}{\boxed{17.5}}$	Division Property of Equality
$\boxed{2} = x$	Simplify.

So, the entry fee per student to the science center is \$2.

Check the solution.

Science Center: $20(x + 2.5) = 20(2 + 2.50)$ or \$ $\boxed{90.00}$

Art Museum: $15(2.5x + 1) = 15(2.5(2) + 1)$ or \$ $\boxed{90.00}$

PG.152-153

Check

A group of 6 friends went to a basketball tournament game. They each bought a ticket for x dollars and spent $8.50 each on snacks. Another group of 4 friends went to the championship game and paid twice as much for each of their tickets as the first group. The group of 4 friends also spent $6.50 each on snacks.

Part A

Which equation can be used to find the cost of each ticket for the group of 6 friends?

- ○ $8.50(x + 6) = 4(2x + 6.50)$
- ○ $6(x + 8.50) = 2(4x + 6.50)$
- ○ $8.50(x + 6) = 6.50(2x + 4)$
- D $6(x + 8.50) = 4(2x + 6.50)$

Part B

What is the cost of each ticket for the group of 6 friends?

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Practice..

PG.157

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

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PG.159-162

Learn Number of Solutions

The solution to an equation is the value of the variable that makes the equation true. Some equations have one solution, while some equations have no solution. When this occurs, no value will make the equation true. Other equations may have infinitely many solutions. When this occurs, the equation is true for every value of the variable.

	No Solution	One Solution	Infinite Solutions
Symbols	$a = b$	$x = a$	$a = a$
Examples	$3x + 4 = 3x$ $4 = 0$ Since $4 \neq 0$, there is no solution.	$2x = 20$ $x = 10$ Since $x = 10$, there is one solution.	$4x + 2 = 4x + 2$ $2 = 2$ Since $2 = 2$, all of the values of x are solutions.

Learn Analyze Equations to Determine the Number of Solutions

It is possible to determine the number of solutions to an equation without actually solving it. The number of solutions to an equation can be found after each side has been simplified.

Complete the table to indicate whether the coefficients and constants are *the same* or *different*.

	No Solution	One Solution	Infinite Solutions
Equation	$6x + 3 = 6x + 1$	$6x + 3 = 4x + 1$	$6x + 3 = 6x + 3$
Coefficients	the same	different	the same
Constants	different	different or the same	The same

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Practice..

PG.167

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

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Alshyiam School C2 & 3

Math Department

Unit 4

Done by:
Laila Alrashedi

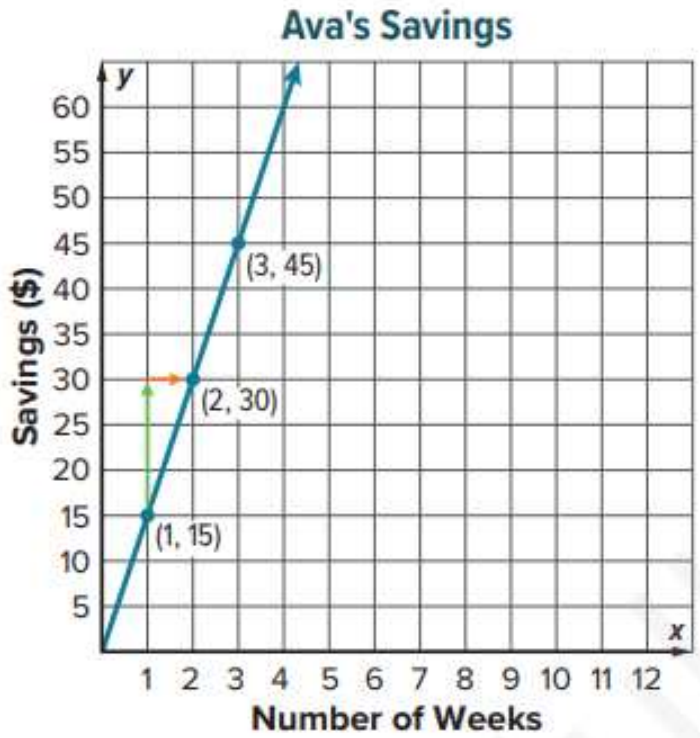
School Principal:
Noura AlGaithi

PG.177-180

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.



Part A Find and interpret the slope.

To find the slope, find the constant rate of change. Choose any two points on the line, such as (1, 15) and (2, 30). Then find the rate of change between the points.

$$\frac{\text{change in savings}}{\text{change in weeks}} = \frac{\$(30 - 15)}{(2 - 1)\text{ weeks}}$$

$$= \frac{\$\ 15}{1\ \text{week}}$$

The constant rate of change is \$15 per week. So, the slope of the line is $\frac{15}{1}$ or 15. This means that Ava saved \$15 every week.

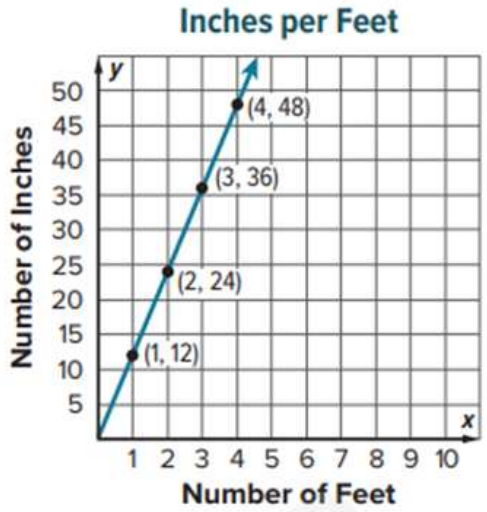
Part B Find the unit rate and compare it to the slope.

Ava saved \$ 15 every week. So, the unit rate is \$15 per week, which is also the slope of the line.

PG.177-180

Check

The graph shows the relationship between feet and inches.



Part A

Which of the following is the correct interpretation of the slope?

- (A) The slope of the line is $\frac{12}{1}$. This means that there are 12 inches in 1 foot.
- ◯ The slope of the line is $\frac{1}{12}$. This means that there are 12 inches in 1 foot.
- ◯ The slope of the line is $\frac{24}{1}$. This means that there are 24 inches in 1 foot.
- ◯ The slope of the line is $\frac{36}{2}$. This means that there are 36 inches in 2 feet.

Part B

Find the unit rate and compare it to the slope.

The unit rate is 12 inches per foot, which is also the slope of the line.

PG.177-180

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.

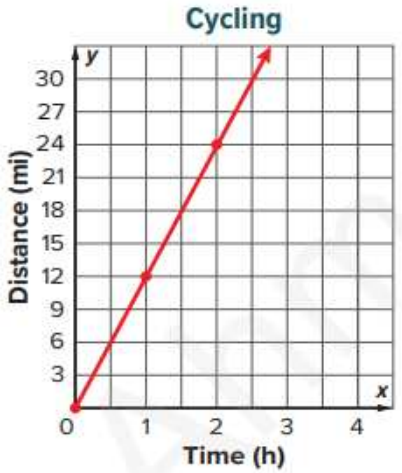
Part A Graph the equation.

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

Hours, x	$y = 12x$	Miles, y
0	$y = 12(0)$	0
1	$y = 12(1)$	12
2	$y = 12(2)$	24

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.

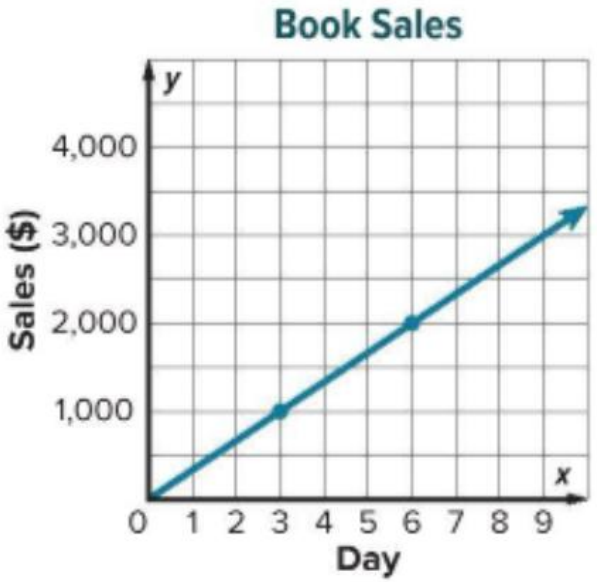
In the equation of a proportional linear relationship $y = mx$, m represents the unit rate or slope. The equation $y = 12x$ represents the distance y in miles that the cyclist can ride in x hours.

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

Practice..

PG.189

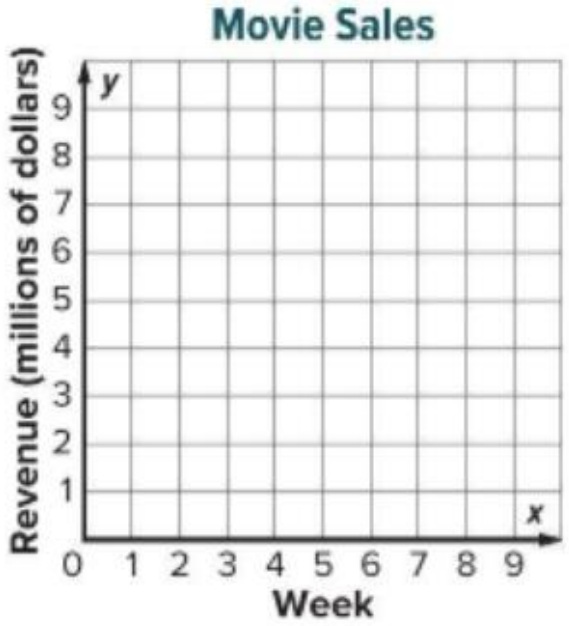
1. The graph shows the amount of book sales over several days. Find and interpret the slope. Then find the unit rate and compare it to the slope. (Example 1)



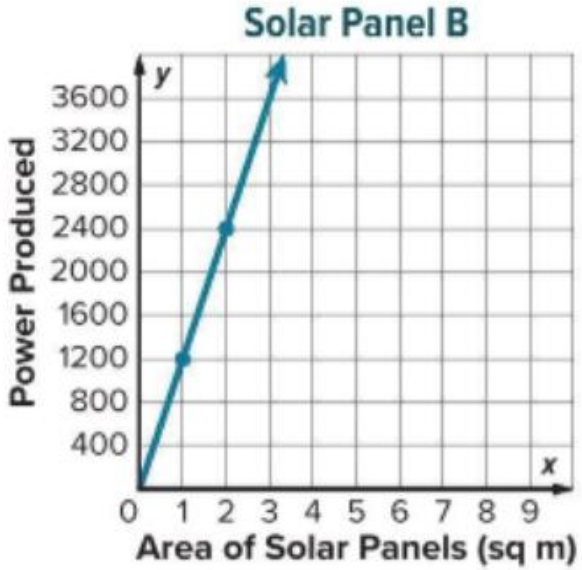
2. The cost y of renting a snowmobile for x hours is a proportional relationship. This can be represented by the equation $y = 33.75x$. Graph the equation. Then find and interpret the slope. (Example 2)



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)

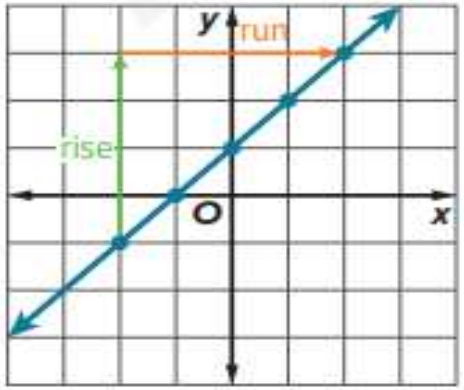
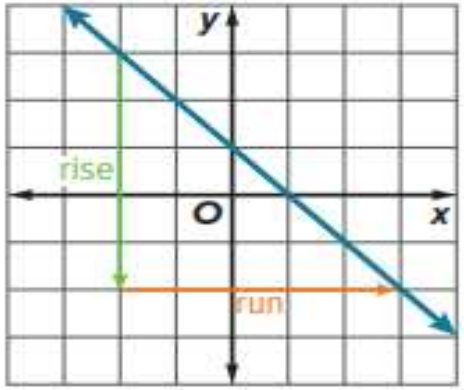


Learn Slope of a Line

The term slope is used to describe the steepness of a line. Slope is the rate of change between any two points on a line. The vertical change (change in *y*-value) is called the **rise** while the horizontal change (change in *x*-value) is called the **run**. So, slope is the ratio of the rise to the run. In linear relationships, the slope is always constant.

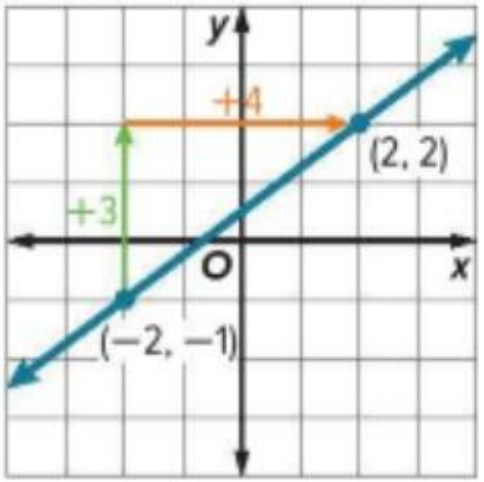
$$\text{slope} = \frac{\text{rise} \leftarrow \text{vertical change between any two points}}{\text{run} \leftarrow \text{horizontal change between the same two points}}$$

Slope can be positive or negative. The slope of a line that points upward from, from left to right, is positive, and the slope of a line that points downward, from left to right, is negative.

Positive Slope	Negative Slope
	

Learn Find Slope from a Graph

The slope of a line can be found from a graph by finding the ratio of the rise to the run between any two points on the line.



$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{3}{4}$$

← vertical change between (−2, −1) and (2, 2)

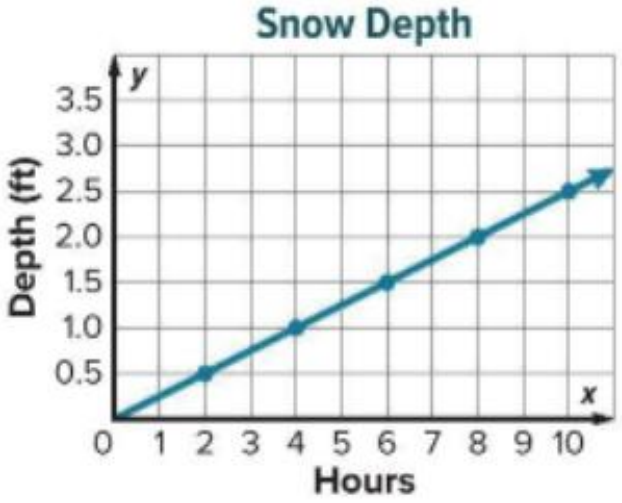
← horizontal change between (−2, −1) and (2, 2)

When reading the rise and run from a graph, a rise up is positive, a rise down is negative, a run to the right is positive, and a run to the left is negative.

Practice..

PG. 203

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)



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



PG. 203

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

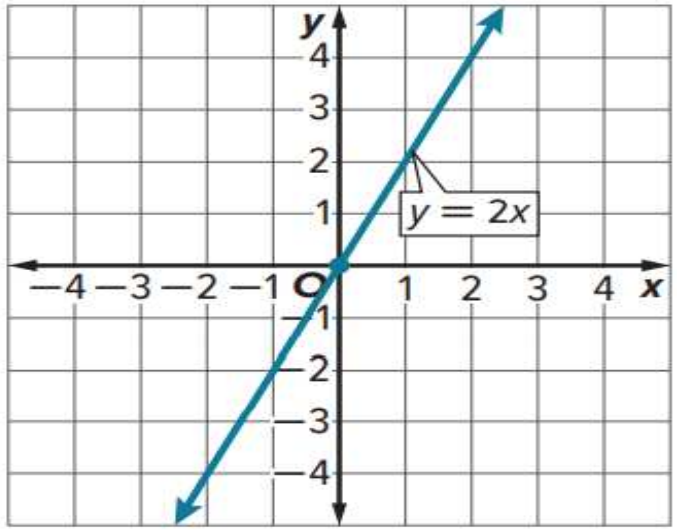
5. $G(-3, 2), H(7, 2)$

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

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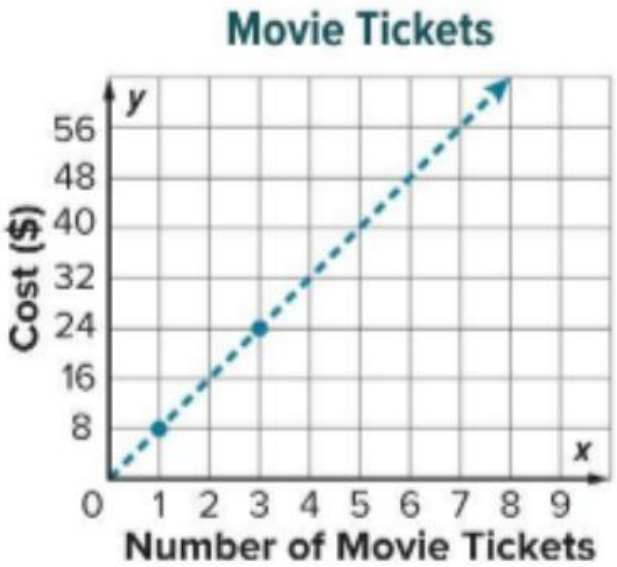
Learn Direct Variation

When the ratio of two variable quantities is constant, a proportional linear relationship exists. This proportional linear relationship is called a **direct variation**. The constant ratio is also called the **constant of variation** or the **constant of proportionality**. In the direct variation equation, $y = mx$, m represents the constant of variation, the constant of proportionality, the slope, and the unit rate.

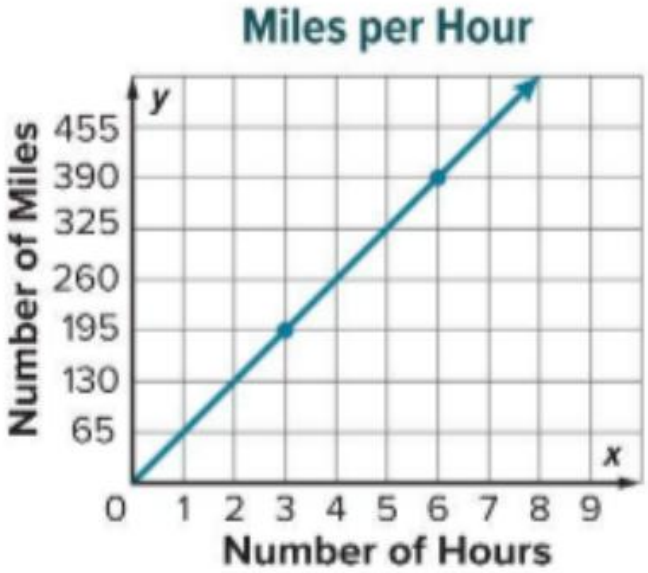
Words	Example
A direct variation is a linear relationship in which the ratio of y to x is a constant, m. We say y varies directly with x.	$y = 2x$
Symbols	**Graph**
$m = \frac{y}{x}$ or $y = mx$, where m is the constant of variation and $m \neq 0$.	

PG. 223

1. The cost y of movie tickets varies directly with the number of tickets x as shown in the graph. Write a direct variation equation to represent this relationship. Then identify the constant of variation and interpret its meaning. (Example 1)



2. The number of miles y varies directly with the number of hours x as shown in the graph. Write a direct variation equation to represent this relationship. Then identify the constant of variation and interpret its meaning. (Example 1)



PG. 223

3. The cost of paper varies directly with the number of reams bought. Suppose two reams cost $5.10. Write a direct variation equation to represent this relationship. Then identify the constant of variation and interpret its meaning. (Example 2)

4. The amount of flour needed for a recipe varies directly with the number of servings planned. Three servings require $4\frac{1}{2}$ cups of flour. Write a direct variation equation to represent this relationship. Then identify the constant of variation and interpret its meaning. (Example 2)

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PG. 235

PG. 235

Identify the slope and *y*-intercept of the graph of each equation. (Example 1)

1. $y = \frac{1}{2}x - 5$

2. $y = 3x - 1$

Write the equation of a line in slope-intercept form with each slope and *y*-intercept. (Example 2)

3. slope $= -\frac{1}{3}$, *y*-intercept $= 4$

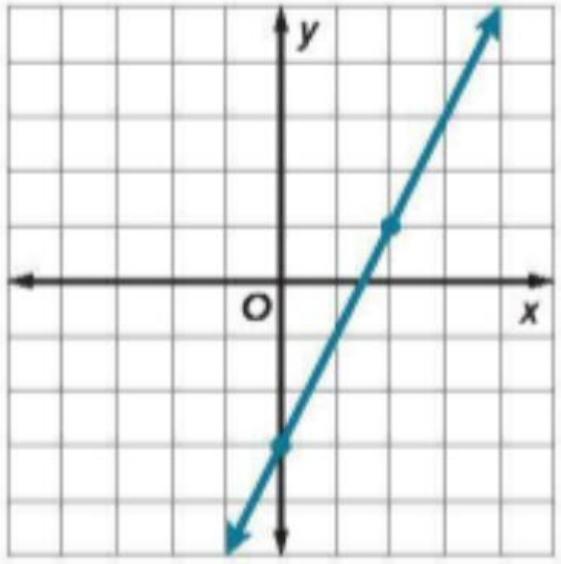
4. slope $= \frac{3}{2}$, *y*-intercept $= -3$

5. slope $= 4$, *y*-intercept $= -2$

6. slope $= -1$, *y*-intercept $= 6$

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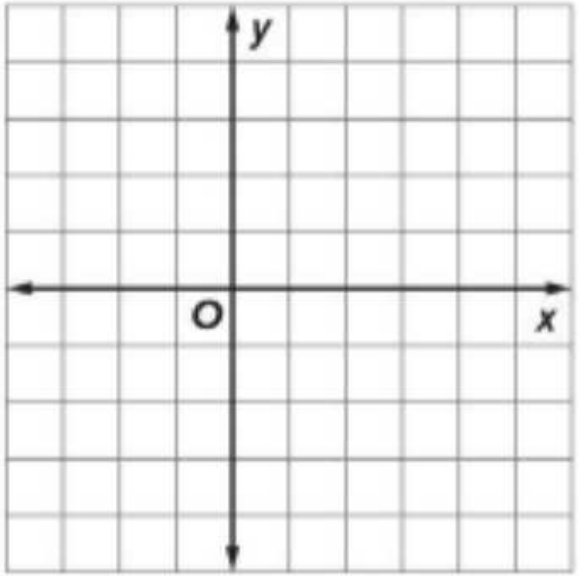
7. Write an equation in slope-intercept form for the graph shown. (Example 3)



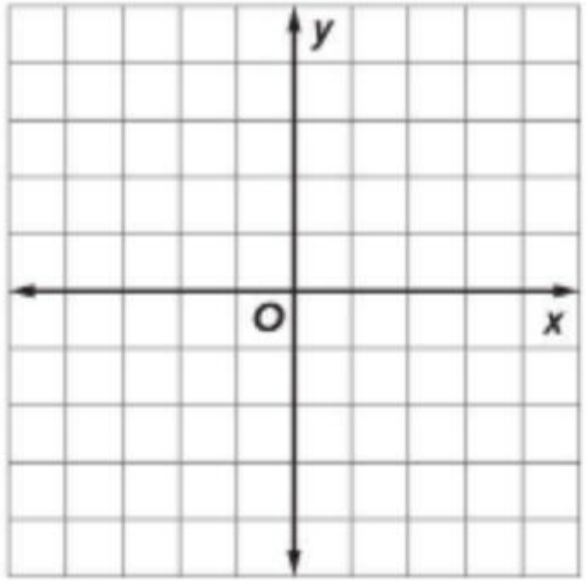
Graph each equation using the slope and y-intercept. (Example 1)

PG. 245

1. $y = \frac{3}{5}x - 3$

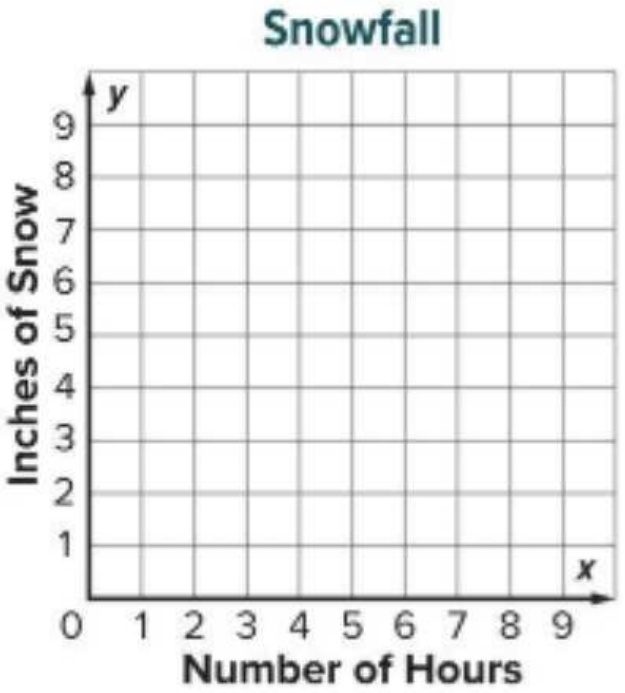


2. $y = -\frac{2}{3}x - 2$



PG. 245

3. The equation $y = \frac{1}{5}x + 3.5$ can be used to find the amount of accumulated snow y in inches x hours after 5 P.M. on a certain day. Graph this equation. (Example 2)

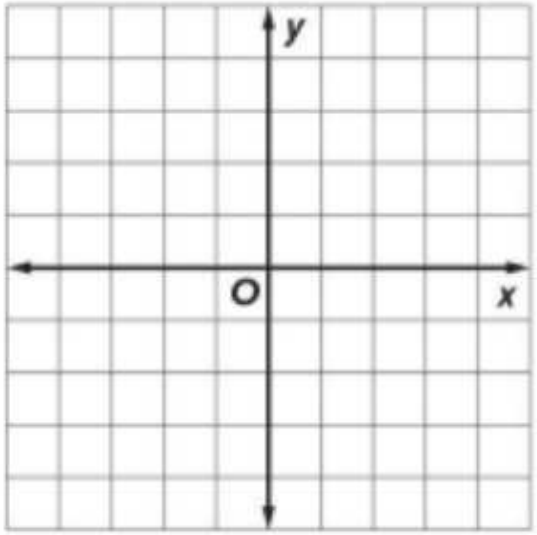


4. Alliyah's gift card balance can be represented by the equation $y = -5x + 50$, where y represents the gift card balance after x number of days. Graph this equation. (Example 2)



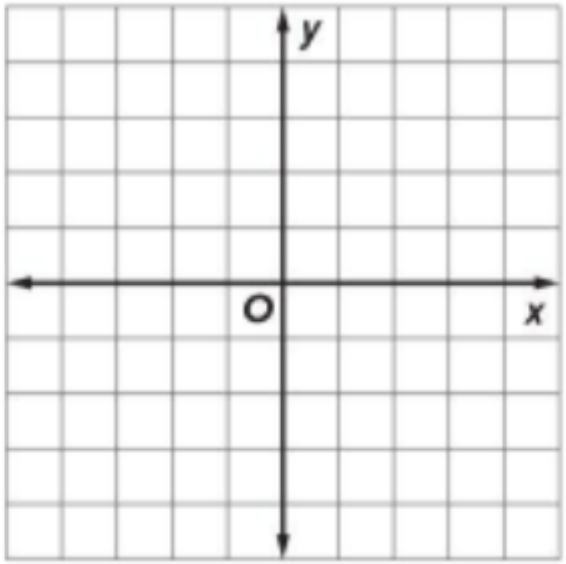
Graph each equation. (Examples 3 and 4)

5. $y = -3$



Graph each equation. (Examples 3 and 4)

6. $x = 2$



PG. 245

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Good Luck

Done by:
Meera Alhassani

School Principle:
Afra Alshamesi