تغطية اختبار نهاية الفصل – أسئلة تدريبية



تم تحميل هذا الملف من موقع المناهج الإماراتية	
موقع المناهج ⇦ المناهج الإماراتية ⇦ رياضيات ⇦ الفصل الأول ⇦ ملفات متنوعة ⇦ الملف	
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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: Boys C2 - School Sedeirah Al	

التواصل الاجتماعي بحسب					
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المزيد من الملفات بحسب والمادة رياضيات في الفصل الأول

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Al Sedeirah School - C2 Boys

Grade 8 Adv Term 1 Exam Coverage

Practice questions from *Reveal Math, Grade 8, Volume I*

Name: _____ **Class:** _____ **Date:** _____

Instructions: This paper follows the End of Term 1 exam coverage sheet. Every exercise in the listed ranges is included, with the topic and the textbook page for each question. **Section A:** Multiple Choice (Q1–Q20). **Section B:** Free Response (Q21–Q25). Show your working in the space given. **Calculators are not allowed.**

SECTION A — MULTIPLE CHOICE QUESTIONS (Q1 – Q20)

Choose the correct option and write its letter in the answer box.

Q1 | Lesson 1-1: Powers and Exponents **Textbook p. 11, Exercises 1–6**

Use integer exponents to show repeated multiplication of rational numbers.

Write each expression using exponents (1–2). Evaluate each expression (3–6).

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

A) $(-7)^4 \cdot 5^2$ **B)** $-7^2 \cdot 5^4$ **C)** $(-7)^2 \cdot 5^4$ **D)** $(-7)^2 + 5^4$

Working space: **Answer:** ☐

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

A) $n^2p^2r^3$ **B)** $n^2p^3r^2$ **C)** $n^3p^2r^2$ **D)** $2n + 2p + 3r$

Working space: **Answer:** ☐

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

A) 97 **B)** 20 **C)** 73 **D)** 65

Working space: **Answer:** ☐

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4. $6 + 2^6 =$

A) 18 **B)** 70 **C)** 64 **D)** 384

Working space: **Answer:** ☐

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

A) $\frac{119}{16}$ **B)** $\frac{13}{2}$ **C)** $\frac{137}{16}$ **D)** $\frac{23}{4}$

Working space: **Answer:** ☐

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

A) 1 **B)** -19 **C)** -1 **D)** -3

Working space: **Answer:** ☐

Q2 | Lesson 1-2: Multiply and Divide Monomials Textbook p. 23, Exercises 1–6

Use the Laws of Exponents to multiply and divide monomials with common bases.

Simplify each expression.

1. $3^8 \cdot 3 =$

A) 3^8 **B)** 3^9 **C)** 9^9 **D)** 3^{16}

Working space: **Answer:** ☐

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

A) m^{10} **B)** m^3 **C)** $2m^7$ **D)** m^7

Working space: **Answer:** ☐

---

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

A) $24m^3n^6$ **B)** $11m^4n^5$ **C)** $24m^4n^6$ **D)** $24m^4n^5$

Working space: **Answer:** ☐

---

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

A) $-72p^8$ **B)** $-72p^6$ **C)** $-17p^6$ **D)** $72p^6$

Working space: **Answer:** ☐

---

5. $\frac{b^{12}}{b^5} =$

A) b^{17} **B)** b^{60} **C)** b^{7} **D)** $b^{\frac{12}{5}}$

Working space: **Answer:** ☐

---

6. $\frac{5^5 \cdot 6^3 \cdot 8^{10}}{5^3 \cdot 6 \cdot 8^9} =$

A) $5^2 \cdot 6^2 \cdot 8$ **B)** $5^2 \cdot 6^3 \cdot 8$ **C)** $5^8 \cdot 6^4 \cdot 8^{19}$ **D)** $5^2 \cdot 6^2 \cdot 8^9$

Working space: **Answer:** ☐

Q3 | Lesson 1-3: Powers of Monomials **Textbook p. 31, Exercises 1–8**

Use the Power of a Power Property and the Power of a Product Property to simplify expressions with integer exponents.

Simplify each expression.

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

A) 7^5 **B)** 7^8 **C)** 7^6 **D)** 7^9

Working space: **Answer:** ☐

---

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

A) 8^9 **B)** 8^6 **C)** 8^{27} **D)** 24^3

Working space: **Answer:** ☐

---

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

A) d^{13} **B)** d^{36} **C)** d^{49} **D)** d^{42}

Working space: **Answer:** ☐

---

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

A) z^{10} **B)** z^{21} **C)** z^{343} **D)** z^4

Working space: **Answer:** ☐

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

A) $64m^{30}$ **B)** $12m^{30}$

C) $64m^{11}$ **D)** $2m^{30}$

Working space: **Answer:**

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

A) $28a^{20}b^{24}$ **B)** $2401a^9b^{10}$

C) $2401a^{20}b^{24}$ **D)** $7a^{20}b^{24}$

Working space: **Answer:**

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

A) $-15w^{15}z^{40}$ **B)** $-243w^{15}z^{40}$

C) $243w^{15}z^{40}$ **D)** $-243w^8z^{13}$

Working space: **Answer:**

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

A) $-625r^{16}s^{40}$ **B)** $-20r^{16}s^{40}$

C) $625r^8s^{14}$ **D)** $625r^{16}s^{40}$

Working space: **Answer:**

Q4 | Lesson 1-5: Scientific Notation **Textbook p. 53, Exercises 5–6**

Write very large and very small numbers using scientific notation.

Write each number in scientific notation.

5. 2,204,000,000 =

A) 2.204×10^8 **B)** 22.04×10^8 **C)** 2.204×10^{10} **D)** 2.204×10^9

Working space: **Answer:**

6. 0.0000000642 =

A) 6.42×10^{-7} **B)** 6.42×10^{-8} **C)** 6.42×10^8 **D)** 64.2×10^{-9}

Working space: **Answer:**

Q5 | Lesson 1-6: Compute with Scientific Notation Textbook p. 61, Exercises 1–6

Perform computations with numbers written in scientific notation.

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.

A) 3×10^{13} **B)** 3×10^{20} **C)** 3×10^{22} **D)** 3×10^{23}

Working space: **Answer:** ☐

---

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?

A) 3.66×10^{7} **B)** 3.66×10^{6} **C)** 3.66×10^{8} **D)** 1.75×10^{2}

Working space: **Answer:** ☐

---

3. Evaluate. Express the result in scientific notation: $(1.28 \times 10^{5}) + (1.13 \times 10^{3}) =$

A) 2.41×10^{5} **B)** 2.41×10^{8} **C)** 1.2913×10^{5} **D)** 1.2913×10^{8}

Working space: **Answer:** ☐

---

4. Evaluate. Express the result in scientific notation: $(7.26 \times 10^{6}) - (1.3 \times 10^{4}) =$

A) 7.247×10^{6} **B)** 5.96×10^{6} **C)** 5.96×10^{2} **D)** 7.247×10^{4}

Working space: **Answer:** ☐

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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.

A) 2.72×10^{18} **B)** 3.68×10^{-9} **C)** 2.72×10^{9} **D)** 2.72×10^{8}

Working space: **Answer:** ☐

---

6. 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	

A) 8.65×10^4 **B)** 8.65×10^3 **C)** 4.515×10^4 **D)** 9.895×10^4

Working space: **Answer:**

Q6 | Lesson 2-1: Terminating and Repeating Decimals Textbook p. 77, Exercises 1–4

Show how the decimal form of a rational number repeats eventually.

Write each rational number in decimal form. Then determine whether the decimal is a terminating decimal.

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

A) -0.6875; terminating **B)** -0.6875; non-terminating

C) -1.4545; terminating **D)** $-0.\overline{6875}$; non-terminating

Working space: **Answer:**

---

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

A) 0.15; terminating **B)** $0.\overline{51}$; non-terminating

C) $0.\overline{15}$; non-terminating **D)** $0.1\overline{5}$; non-terminating

Working space: **Answer:**

---

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

A) 4.38; non-terminating

B) 4.375; terminating

C) 4.125; terminating

D) $4.\overline{3}$; non-terminating

Working space:

Answer:

---

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

A) -9.36; terminating

B) $-9.\overline{36}$; non-terminating

C) -9.11; terminating

D) $-9.3\overline{6}$; non-terminating

Working space:

Answer:

Q7 | Lesson 2-1: Terminating and Repeating Decimals **Textbook p. 77, Exercises 9–12**

Show how the decimal form of a rational number repeats eventually.

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

A) 0.5

B) 0.59

C) $0.\overline{6}$

D) $0.\overline{5}$

Working space:

Answer:

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

A) 0.7

B) 0.4375

C) $0.4\overline{3}$

D) 0.04375

Working space:

Answer:

---

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

A) $5\frac{1}{3}$

B) $5\frac{3}{5}$

C) $5\frac{2}{3}$

D) $5\frac{6}{7}$

Working space:

Answer:

---

12. Which of the following fractions, when converted, results in a non-terminating decimal?

A) $\frac{7}{26}$ **B)** $-\frac{11}{5}$ **C)** $\frac{1}{50}$ **D)** $-\frac{3}{32}$

Working space: **Answer:** ☐

Q8 | Lesson 2-2: Roots **Textbook p. 89, Exercises 1–4**

Find square and cube roots.

Simplify using rational numbers. If the expression cannot be simplified, explain why.

1. $\sqrt{361} =$

A) 18 **B)** 21 **C)** 19 **D)** 180.5

Working space: **Answer:** ☐

---

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

A) ± 1.4 **B)** ± 0.14 **C)** ± 14 **D)** 1.4

Working space: **Answer:** ☐

---

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

A) $\frac{3}{4}$ **B)** $\pm\frac{3}{4}$ **C)** $-\frac{9}{8}$ **D)** $-\frac{3}{4}$

Working space: **Answer:** ☐

---

4. $\sqrt{-441} =$

A) -21

B) Cannot be simplified: no real number squared equals -441

C) 21

D) ± 21

Working space: **Answer:** ☐

Q9 | Lesson 2-2: Roots **Textbook p. 89, Exercises 5–10**

Find square and cube roots.

5. Solve $m^2 = 0.04$.

A) $m = \pm 0.2$ **B)** $m = 0.2$ **C)** $m = \pm 0.02$ **D)** $m = 0.02$

Working space: **Answer:**

6. Simplify using rational numbers: $\sqrt[3]{343} =$

A) 49 **B)** 21 **C)** 7 **D)** 114

Working space: **Answer:**

7. Simplify using rational numbers: $\sqrt[3]{-512} =$

A) 8 **B)** -8 **C)** -16 **D)** Not a real number

Working space: **Answer:**

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.

A) 45.5625 feet **B)** 30.375 feet **C)** 9.5 feet **D)** 4.5 feet

Working space: **Answer:**

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?

A) 98 **B)** 28 **C)** 49 **D)** 14

Working space: **Answer:**

10. What is the value of p in the equation shown? $p^3 = -0.027$

A) 0.3 **B)** -0.3 **C)** -0.9 **D)** -0.03

Working space: **Answer:**

Q10 | Lesson 2-3: Real Numbers **Textbook p. 99, Exercises 1–8**

Identify irrational numbers and name the set(s) of real numbers to which a given real number belongs.

Identify whether each number is rational or irrational.

1. $-\sqrt{10}$

A) Rational

B) Both rational and irrational

C) Irrational

D) Neither rational nor irrational

Working space: **Answer:** ☐

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

A) Rational

B) Irrational

C) Both rational and irrational

D) Neither rational nor irrational

Working space: **Answer:** ☐

3. $0.\overline{3}$

A) Irrational

B) Both rational and irrational

C) Rational

D) Neither rational nor irrational

Working space: **Answer:** ☐

4. $\sqrt{81}$

A) Rational

B) Irrational

C) Both rational and irrational

D) Neither rational nor irrational

Working space: **Answer:** ☐

5. 0

A) Irrational

B) Both rational and irrational

C) Neither rational nor irrational

D) Rational

Working space: **Answer:** ☐

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

A) Rational

B) Irrational

C) Both rational and irrational

D) Neither rational nor irrational

Working space: **Answer:** ☐

7. $\sqrt{7}$

A) Irrational
B) Rational
C) Both rational and irrational
D) Neither rational nor irrational

Working space: **Answer:** ☐

---

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

A) Irrational
B) Both rational and irrational
C) Rational
D) Neither rational nor irrational

Working space: **Answer:** ☐

Q11 | Lesson 2-4: Estimate Irrational Numbers Textbook p. 109, Exercises 1–4
Estimate irrational numbers by approximating their locations on a number line or by truncating their decimal expansions.

Estimate each square root or cube root to the nearest integer.

1. $\sqrt{125} \approx$

A) 10
B) 11
C) 12
D) 25

Working space: **Answer:** ☐

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2. $\sqrt{55} \approx$

A) 8
B) 6
C) 27
D) 7

Working space: **Answer:** ☐

---

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

A) 3
B) 5
C) 23
D) 4

Working space: **Answer:** ☐

---

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

A) 9
B) 10
C) 11
D) 307

Working space: **Answer:** ☐

Q12 | Lesson 3-2: Write and Solve Equations with Variables on Each Side
Textbook p. 143, Exercises 1–5

Write linear equations in one variable with rational coefficients and use the properties of equality to solve them.

Write and solve an equation for each exercise.

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?

A) 4 months **B)** 6 months **C)** 8 months **D)** 16 months

Working space: **Answer:** ☐

---

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?

A) 40 seconds **B)** 30 seconds **C)** 80 seconds **D)** 120 seconds

Working space: **Answer:** ☐

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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?

A) 6 pounds **B)** 4 pounds **C)** 8 pounds **D)** 12 pounds

Working space: **Answer:** ☐

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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. For what number of hours is the cost for the rental the same?

A) 5 hours **B)** 1 hour **C)** 3 hours **D)** 7 hours

Working space: **Answer:** ☐

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5. 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?

A) 2 games **B)** 4 games **C)** 16 games **D)** 8 games

Working space: **Answer:**

Q13 | Lesson 3-3: Solve Multi-Step Equations Textbook p. 149, Exercises 1–7

Solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms.

Solve each equation.

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

A) $g = 2$ **B)** $g = -2$ **C)** $g = -\frac{5}{2}$ **D)** $g = \frac{5}{3}$

Working space: **Answer:**

---

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

A) $x = 10$ **B)** $x = -10$ **C)** $x = 4$ **D)** $x = 20$

Working space: **Answer:**

---

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

A) $x = -4.5$ **B)** $x = 1.5$ **C)** $x = 4.5$ **D)** $x = 9$

Working space: **Answer:**

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

A) $y = -1.5$ **B)** $y = 1.5$ **C)** $y = 3$ **D)** $y = 2$

Working space: **Answer:**

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

A) $n = -4$ **B)** $n = 2$ **C)** $n = 8$ **D)** $n = 4$

Working space: **Answer:**

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

A) $x = 5$ **B)** $x = -7$ **C)** $x = 35$ **D)** $x = -5$

Working space: **Answer:**

7. $2\left(\frac{1}{2}q + 1\right) = -3(2q-1) + 8q + 4$

A) $q = 5$ **B)** $q = -5$ **C)** $q = -1$ **D)** $q = -3$

Working space: **Answer:**

Q14 | Lesson 3-5: Determine the Number of Solutions Textbook p. 167, Exercises 1–9

Identify the number of solutions of a linear equation in one variable by simplifying each side and comparing coefficients and constants.

Solve each equation. Determine whether the equation has one solution, no solution, or infinitely many solutions (1–4).

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

A) One solution **B)** Infinitely many solutions

C) No solution **D)** Two solutions

Working space: **Answer:**

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

A) Infinitely many solutions
B) One solution
C) No solution
D) Two solutions

Working space:

Answer: ☐

---

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

A) One solution
B) No solution
C) Infinitely many solutions
D) Two solutions

Working space:

Answer: ☐

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

A) No solution
B) One solution
C) Infinitely many solutions
D) Two solutions

Working space:

Answer: ☐

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5. Complete the equation so that it has infinitely many solutions: $2x-7(x+10)=\square x-\square$

A) 5 and 70
B) -5 and -70
C) -9 and 10
D) -5 and 70

Working space:

Answer: ☐

---

6. Complete the equation so that it has infinitely many solutions: $12x-x+8+3x=\square x+\square$

A) 16 and 8
B) 14 and 8
C) 14 and -8
D) -14 and 8

Working space:

Answer: ☐

---

7. Which expression completes the equation so that it has no solution? $-15x + 4x + 2 - x = ?$

A) $-12x + 7$ **B)** $-12x + 2$ **C)** $-10x + 2$ **D)** $-14x + 7$

Working space: **Answer:**

8. Which expression completes the equation so that it has no solution? $9(x - 4) - 5x = ?$

A) $4x - 36$ **B)** $9x - 36$ **C)** $4x - 20$ **D)** $14x - 20$

Working space: **Answer:**

9. 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 different.

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

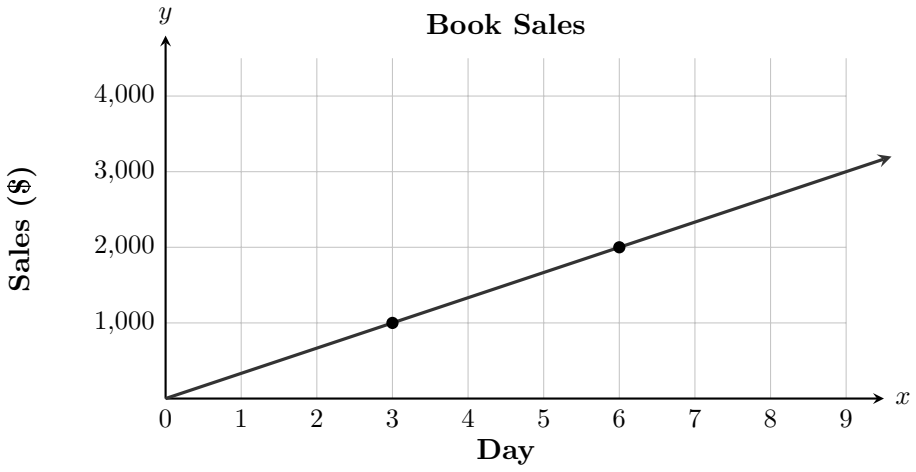
D) The coefficients are different, and the constants are the same.

Working space: **Answer:**

Q15 | Lesson 4-1: Proportional Relationships and Slope Textbook p. 189, Exercises 1–4

Graph and compare proportional relationships using words, equations, and tables and interpret the unit rate as the slope of the line.

1. The graph shows the amount of book sales over several days. Find and interpret the slope.



A) 3; \$3 of sales per day

B) 1000; \$1000 of sales per day

C) $\frac{3}{1000}$; 3 days for every \$1000

D) $\frac{1000}{3}$; about \$333 of sales per day

Working space: **Answer:**

2. The cost y of renting a snowmobile for x hours is a proportional relationship represented by $y = 33.75x$. Find and interpret the slope of the graph of the equation.

A) $\frac{1}{33.75}$; it costs \$33.75 for each hour

B) 33.75; a one-time fee of \$33.75

C) 67.5; it costs \$67.50 for each hour

D) 33.75; it costs \$33.75 for each hour

Working space: **Answer:**

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. Find and interpret the slope of the graph of this relationship.

A) 9.2; the movie earns \$9.2 million each week

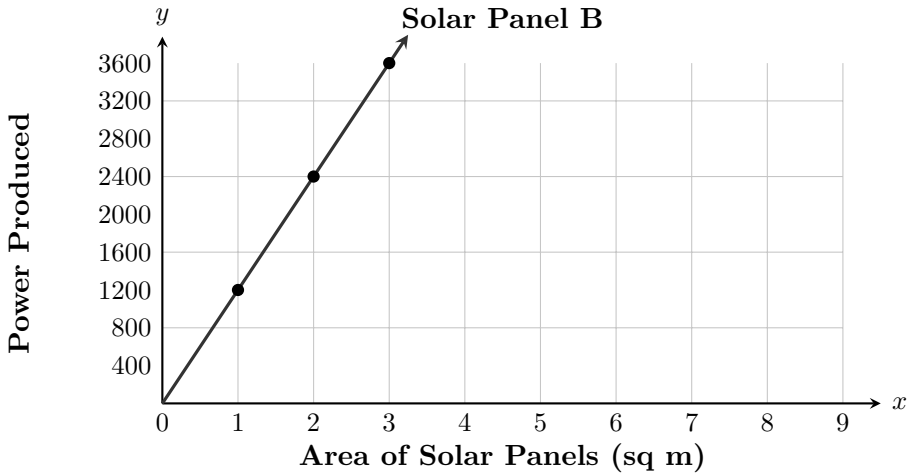
B) 2.3; the movie earns \$2.3 million each week

C) 36.8; the movie earns \$36.8 million each week

D) $\frac{4}{9.2}$; weeks needed per million dollars

Working space: **Answer:**

4. The amount of power y solar panel A can produce with an area of x square meters is $y = 1{,}020x$. The amount of power solar panel B can produce is shown on the graph. Which solar panel can produce more power?



A) Panel A, because its slope 1,020 is greater

B) Both panels produce the same power

C) Panel B, because its slope 1,200 is greater

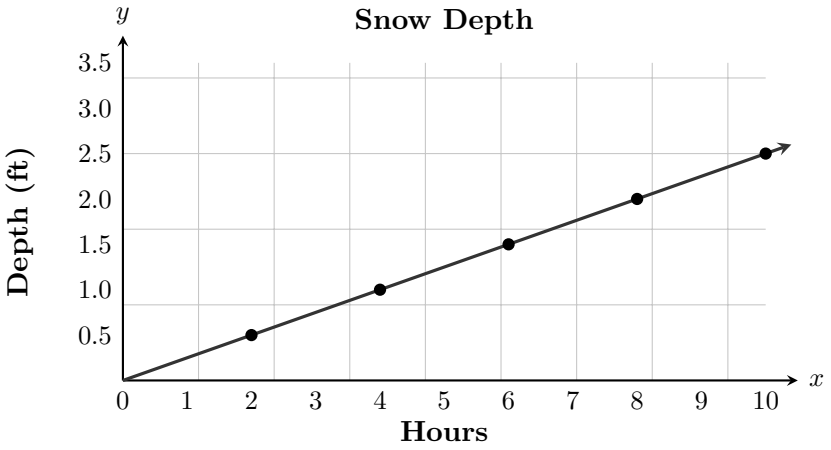
D) It cannot be determined

Working space: **Answer:**

Q16 | Lesson 4-2: Slope of a LineTextbook pp. 192–195 (Examples 1–3); p. 203, Exercises 1–3

Identify the slope of a line and interpret it as the rate of change within the context of the problem.

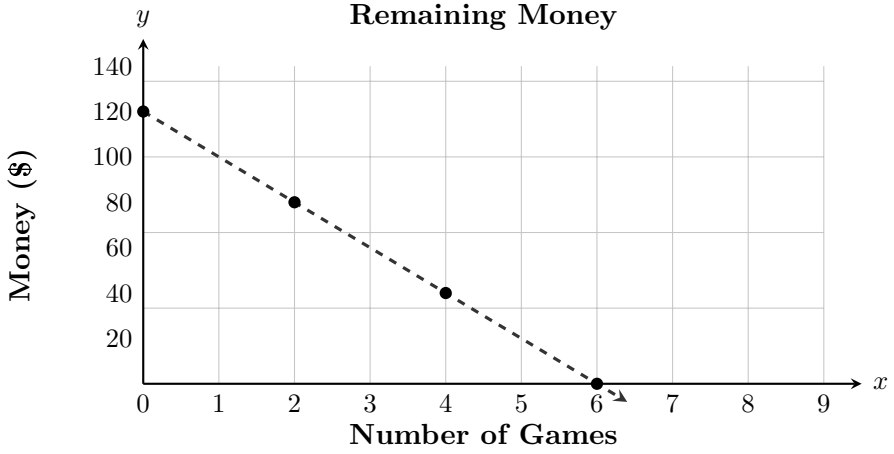
1. The graph shows the depth in feet of snow after each two-hour period during a snowstorm. Find the slope of the line.



A) $\frac{1}{4}$ **B)** 4 **C)** $\frac{1}{2}$ **D)** $\frac{5}{2}$

Working space: **Answer:**

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



A) 20 **B)** $-\frac{1}{20}$ **C)** -20 **D)** $\frac{1}{20}$

Working space: **Answer:**

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

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

A) $-\frac{4}{3}$ **B)** $\frac{4}{3}$ **C)** $-\frac{3}{4}$ **D)** $\frac{3}{4}$

Working space: **Answer:**

Q17 | Lesson 4-2: Slope of a LineTextbook pp. 192–195 (Examples 1–3); p. 203, Exercises 4–6

Identify the slope of a line and interpret it as the rate of change within the context of the problem.

Find the slope of the line that passes through each pair of points.

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

A) 1 **B)** 11 **C)** -11 **D)** -1

Working space: **Answer:**

---

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

A) Undefined **B)** 0 **C)** 1 **D)** 10

Working space: **Answer:**

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

A) Undefined **B)** 0 **C)** -10 **D)** 1

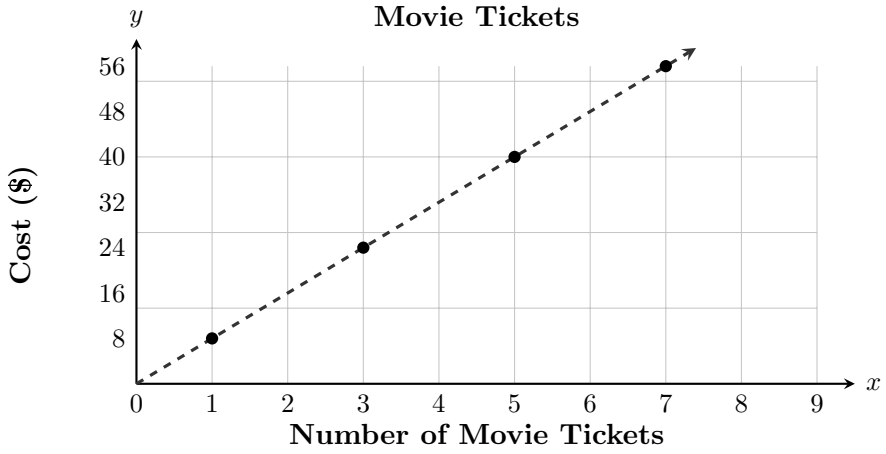
Working space: **Answer:**

Q18 | Lesson 4-4: Direct Variation Textbook p. 223, Exercises 1–5

Derive the equation $y = mx$ from the slope formula and use direct variation equations to represent and solve real-world and mathematical problems.

Write a direct variation equation to represent each relationship. Then identify the constant of variation and interpret its meaning.

1. The cost y of movie tickets varies directly with the number of tickets x as shown in the graph.



A) $y = \frac{1}{8}x$; each ticket costs \$8

B) $y = x + 8$; there is an \$8 fee

C) $y = 8x$; each ticket costs \$8

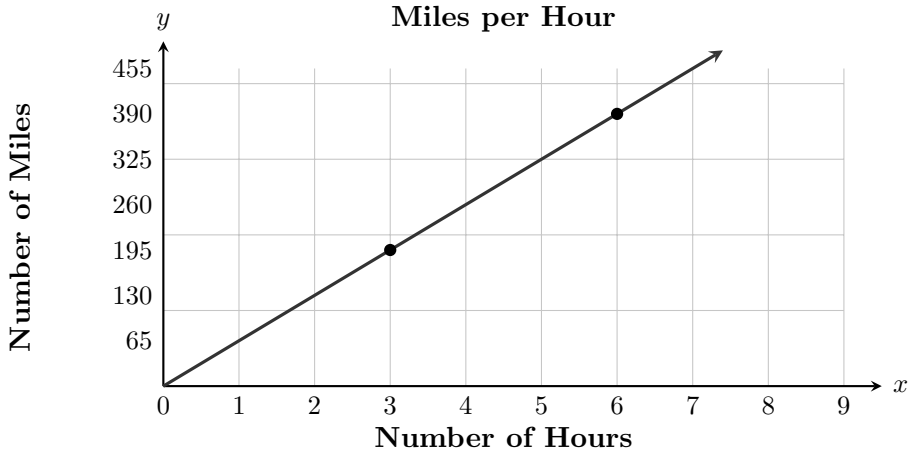
D) $y = 16x$; each ticket costs \$16

Working space:

Answer:

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2. The number of miles y varies directly with the number of hours x as shown in the graph.



A) $y = \frac{1}{65}x$; the car travels 65 miles each hour

B) $y = 65x$; the car travels 65 miles each hour

C) $y = x + 65$; the car starts 65 miles away

D) $y = 130x$; the car travels 130 miles each hour

Working space:

Answer:

---

3. The cost of paper varies directly with the number of reams bought. Suppose two reams cost \$5.10.

A) $y = 5.10x$; one ream costs \$5.10

B) $y = 10.2x$; one ream costs \$10.20

C) $y = x + 2.55$; there is a \$2.55 fee

D) $y = 2.55x$; one ream costs \$2.55

Working space: **Answer:**

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.

A) $y = \frac{2}{3}x$; $\frac{2}{3}$ cup per serving

B) $y = 13.5x$; $13\frac{1}{2}$ cups per serving

C) $y = x + 1.5$; $1\frac{1}{2}$ cups extra

D) $y = \frac{3}{2}x$; $1\frac{1}{2}$ cups per serving

Working space: **Answer:**

5. The distance a bus travels varies directly with time as shown in the table.

Time (h), x	1.5	3	4.5	6
Distance (mi), y	93.75	187.5	281.25	375

A) $y = 93.75x$; the bus travels 93.75 miles each hour

B) $y = 62.5x$; the bus travels 62.5 miles each hour

C) $y = \frac{1}{62.5}x$; the bus travels 62.5 miles each hour

D) $y = x + 62.5$; the bus starts 62.5 miles away

Working space: **Answer:**

Q19 | Lesson 4-5: Slope-Intercept Form **Textbook p. 235, Exercises 1–6**

Write equations of the form $y = mx + b$ when given a table, graph, or verbal description.

Identify the slope and y-intercept of the graph of each equation (1–2).

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

A) slope -5, y-intercept $\frac{1}{2}$

B) slope $\frac{1}{2}$, y-intercept 5

C) slope $\frac{1}{2}$, y-intercept -5

D) slope 2, y-intercept -5

Working space: **Answer:**

2. $y = 3x - 1$

A) slope 3, y-intercept -1

B) slope -1, y-intercept 3

C) slope 3, y-intercept 1

D) slope $\frac{1}{3}$, y-intercept -1

Working space: **Answer:** ☐

Write the equation of a line in slope-intercept form with each slope and y-intercept (3–6).

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

A) $y = 4x - \frac{1}{3}$ **B)** $y = \frac{1}{3}x + 4$ **C)** $y = -\frac{1}{3}x + 4$ **D)** $y = -\frac{1}{3}x - 4$

Working space: **Answer:** ☐

---

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

A) $y = \frac{3}{2}x - 3$ **B)** $y = -3x + \frac{3}{2}$ **C)** $y = \frac{3}{2}x + 3$ **D)** $y = \frac{2}{3}x - 3$

Working space: **Answer:** ☐

---

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

A) $y = -2x + 4$ **B)** $y = 4x + 2$ **C)** $y = -4x - 2$ **D)** $y = 4x - 2$

Working space: **Answer:** ☐

---

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

A) $y = 6x - 1$ **B)** $y = -x + 6$ **C)** $y = x + 6$ **D)** $y = -x - 6$

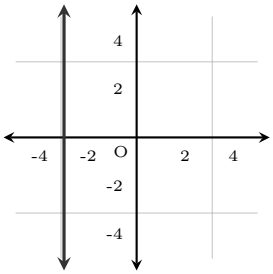
Working space: **Answer:** ☐

Q20 | Lesson 4-6: Graph Linear Equations Textbook pp. 240–241 (Examples 3, 4); p. 245, Exercises 5–6

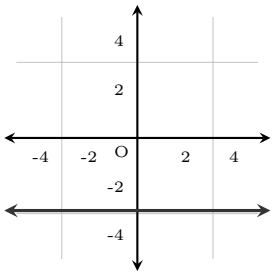
Interpret the slope and y-intercept of a line from an equation of the form $y = mx + b$ in order to graph the line on the coordinate plane.

Graph each equation. Choose the correct graph.

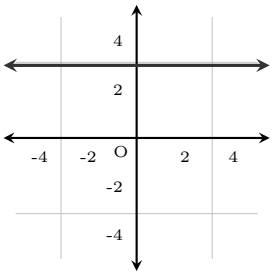
5. Which graph shows the equation $y = -3$?



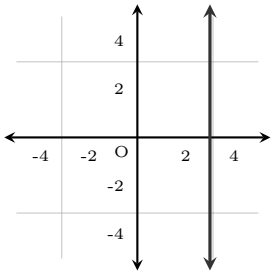
A)



B)



C)

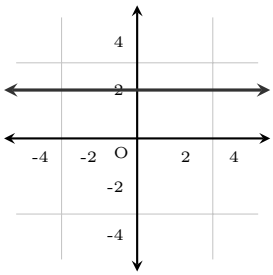


D)

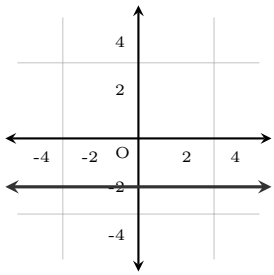
Working space:

Answer:

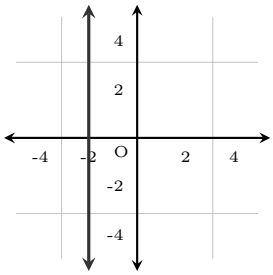
6. Which graph shows the equation $x = 2$?



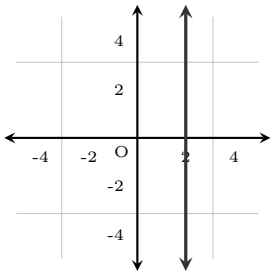
A)



B)



C)



D)

Working space:

Answer:

SECTION B — FREE RESPONSE QUESTIONS (Q21 – Q25)

Show all your working clearly in the space provided.

Q21 | Lesson 1-4: Zero and Negative Exponents Textbook p. 41, Exercises 1–12
Use the Zero Exponent Rule and the Quotient of Powers Property to simplify expressions with zero and negative integer exponents.

Simplify each expression.

1. $46^0 =$

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

Express each using a positive exponent.

3. $8^{-4} =$

4. $y^{-9} =$

Express each fraction using a negative exponent.

5. $\dfrac{1}{d^6} =$

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

Simplify each expression.

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

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

---

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

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

---

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

---

12. Select all of the expressions that are simplified.

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

Q22 | Lesson 2-1: Terminating and Repeating Decimals **Textbook p. 77, Exercises 5–8**

Convert a repeating decimal into a rational number.

Write each decimal as a fraction or mixed number in simplest form.

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

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

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

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

Q23 | Lesson 2-3: Real Numbers & Lesson 2-5: Compare and Order Real Numbers **Textbook p. 99, Exercises 9–13; p. 121, Exercises 1–5**

Identify irrational numbers and name the set(s) of real numbers to which a given real number belongs.
Use rational approximations to compare and order real numbers, including irrational numbers.

Select all the sets of numbers to which each real number belongs.

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

☐ Rational ☐ Irrational ☐ Integer ☐ Whole ☐ Natural

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

☐ Rational ☐ Irrational ☐ Integer ☐ Whole ☐ Natural

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

☐ Rational ☐ Irrational ☐ Integer ☐ Whole ☐ Natural

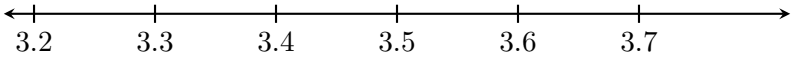
Determine whether each statement is *true* or *false*. If the statement is true, explain your reasoning. If it is false, provide a counterexample.

12. A number cannot be irrational and an integer.

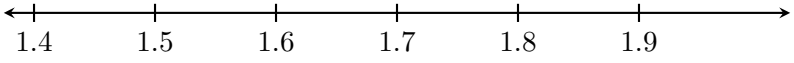
13. All integers are rational.

Complete each statement using $<$, $>$, or $=$. Then graph the numbers on the number line.

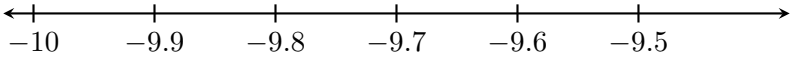
1. $\sqrt{11}$ _____ $3\frac{2}{3}$



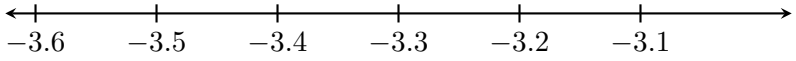
2. $\sqrt{3}$ _____ $\frac{\sqrt{10}}{2}$



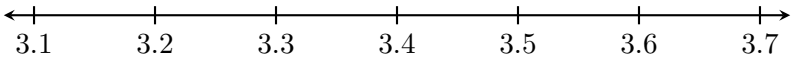
3. $-\pi^2$ _____ $-\sqrt{93}$



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



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.



Q24 | Lesson 3-4: Write and Solve Multi-Step Equations Textbook p. 157, Exercises 1–3

Write and solve multi-step linear equations with rational coefficients by using the Distributive Property and combining like terms.

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. 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.

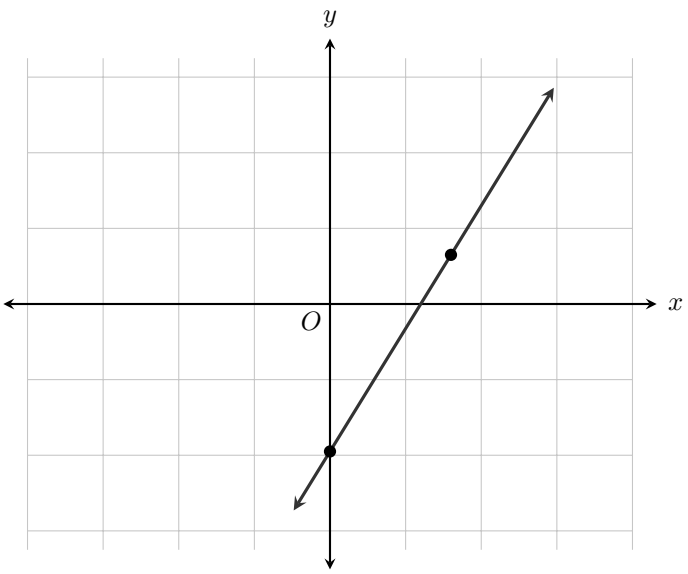
Equation: _____

Cost of a ticket: _____

Q25 | Lesson 4-5: Slope-Intercept Form **Textbook p. 235, Exercises 7–10**

Write equations of the form $y = mx + b$ when given a table, graph, or verbal description.

7. Write an equation in slope-intercept form for the graph shown.



Equation: _____

8. The Augello family is driving from Columbus to St. Louis at a constant rate of 65 miles per hour. The distance between the two cities is 420 miles. Write an equation in slope-intercept form to represent the distance y in miles remaining after driving x hours.

9. The table shows the costs for art show participants, including the $30 registration fee. Write an equation in slope-intercept form that represents the data in the table.

Number of Pieces of Art	**Cost ($)**
0	30
2	90
4	150
6	210
8	270

---

10. Select all of the statements that are true about the equation $y = -\frac{3}{5}x + 8$.

☐ The slope of the line is negative.
☐ The slope of the line is 8.
☐ The y-intercept of the line is 8.
☐ The y-intercept of the line is $-\frac{3}{5}$.
☐ The slope of the line is $-\frac{3}{5}$.
