أسئلة اختيار من متعدد في التعبيرات العددية واللفظية – ريفيل

تم تحميل هذا الملف من موقع المناهج الإماراتية
موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف التاسع العام ⇦ 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 منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

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

المزيد من الملفات بحسب الصف التاسع العام والمادة رياضيات في الفصل الأول	
1	أسئلة الجزء الكتابي – منهاج ريفيل
2	أسئلة اختيار من متعدد في – ريفيل
3	هيكل 9 متقدم ريفيل
4	الهيكل الوزاري المعتمد ريفيل 2027
5	الهيكل الوزاري بريدج 2017

تحميل تطبيق المناهج للهواتف الذكية	
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Electronic Exam

Multiple Choice Questions 1–20 · Grade 9 General · Reveal · Modules 1, 2 and 4

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Write a numerical expression for each verbal expression.

11. the sum of three and seven divided by two

a) $(3 \times 7) \div 2$	**b)** $3 + 7 \div 2$
c) $2 \div (3 + 7)$	**d)** $(3 + 7) \div 2$

Solution:

Write a numerical expression for each verbal expression.

12. the difference of six and two divided by four

a) $4 \div (6 - 2)$	**b)** $(2 - 6) \div 4$
c) $6 - 2 \div 4$	**d)** $(6 - 2) \div 4$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Write a numerical expression for each verbal expression.

13. the sum of four and nine times three

a) $4 \times 9 + 3$	**b)** $(4 + 9) \div 3$
c) $4 + 9 + 3$	**d)** $(4 + 9) \times 3$

Solution:

Write a numerical expression for each verbal expression.

14. eighteen divided by the sum of two and seven

a) $18 \div 2 + 7$	**b)** $18 \times (2 + 7)$
c) $18 \div (2 + 7)$	**d)** $(2 + 7) \div 18$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Write a numerical expression for each verbal expression.

15. ten divided by the product of four and five

a) $10 \times 4 \div 5$	**b)** $10 \div (4 \times 5)$
c) $(4 \times 5) \div 10$	**d)** $10 \div (4 + 5)$

Solution:

Write a numerical expression for each verbal expression.

16. the difference of eleven and four times five

a) $11 \times 5 - 4$	**b)** $(11 - 4) \div 5$
c) $(11 - 4) \times 5$	**d)** $(4 - 11) \times 5$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Write a numerical expression for each verbal expression.

17. the sum of one and two divided by twenty

a) $(1 + 2) \times 20$	**b)** $20 \div (1 + 2)$
c) $(1 \times 2) \div 20$	**d)** $(1 + 2) \div 20$

Solution:

Write a numerical expression for each verbal expression.

18. the sum of two and four and six times eight

a) $(2 + 4) \times (6 + 8)$	**b)** $(2 + 4 + 6) \div 8$
c) $2 \times 4 \times 6 + 8$	**d)** $(2 + 4 + 6) \times 8$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Write a numerical expression for each verbal expression.

19. the sum of twelve and sixteen divided by the sum of three and four

a) $(12 + 16) \div (3 \times 4)$	**b)** $(3 + 4) \div (12 + 16)$
c) $(12 + 16) \div (3 + 4)$	**d)** $(12 \times 16) \div (3 + 4)$

Solution:

Write a numerical expression for each verbal expression.

20. the difference of twenty-two and six divided by the sum of five and three

a) $(6 - 22) \div (5 + 3)$	**b)** $(22 + 6) \div (5 - 3)$
c) $(22 - 6) \div (5 + 3)$	**d)** $(22 - 6) \div (5 \times 3)$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Write a numerical expression for each verbal expression.

21. the sum of thirty-six and fourteen divided by the product of two and five

a) $(36 \times 14) \div (2 \times 5)$

b) $(36 + 14) \div (2 + 5)$

c) $(36 + 14) \div (2 \times 5)$

d) $(2 \times 5) \div (36 + 14)$

Solution:

Hint

sum, plus, more than → +

difference, minus, less than → –

product, times → ×

quotient, divided by → ÷

"the sum of a and b divided by c" → (a + b) ÷ c

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Rewrite each expression using the Distributive Property. Then simplify.

23. $2(x + 4)$

a) $2x + 4$	**b)** $2x + 8$
c) $2x + 6$	**d)** $x + 8$

Solution:

24. $(5 + n)3$

a) $8 + 3n$	**b)** $15 + 3n$
c) $15 + n$	**d)** $5 + 3n$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

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Rewrite each expression using the Distributive Property. Then simplify.

25. $(4 - 3m)8$

a) $32 - 24m$	**b)** $32 - 3m$
c) $32 + 24m$	**d)** $4 - 24m$

Solution:

26. $-3(2x - 6)$

a) $6x + 18$	**b)** $-6x - 18$
c) $-6x - 6$	**d)** $-6x + 18$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

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Rewrite each expression using the Distributive Property. Then simplify.

27. $(2 - 4n)17$

a) $34 - 68n$	**b)** $19 - 21n$
c) $34 + 68n$	**d)** $34 - 4n$

Solution:

Rewrite each expression using the Distributive Property. Then simplify.

28. $11(4d + 6)$

a) $44d + 6$	**b)** $44d + 17$
c) $44d + 66$	**d)** $15d + 17$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

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Rewrite each expression using the Distributive Property. Then simplify.

29. $(\frac{1}{3} - 2b)27$

a) $9 - 54b$	**b)** $9 - 2b$
c) $9 + 54b$	**d)** $81 - 54b$

Solution:

Rewrite each expression using the Distributive Property. Then simplify.

30. $4(8p + 16q - 7r)$

a) $32p + 16q - 7r$	**b)** $12p + 20q - 3r$
c) $32p + 64q - 28r$	**d)** $32p + 64q + 28r$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

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Rewrite each expression using the Distributive Property. Then simplify.

31. $6(2c - cd^2 + d)$

a) $8c - 6cd^2 + 6d$	**b)** $12c + 6cd^2 + 6d$
c) $12c - 6cd^2 + 6d$	**d)** $12c - cd^2 + d$

Solution:

Rewrite each expression using the Distributive Property. Then simplify.

32. $7(h - 10)$

a) $7h + 70$	**b)** $h - 70$
c) $7h - 10$	**d)** $7h - 70$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

Rewrite each expression using the Distributive Property. Then simplify.

33. $3(m + n)$

a) $3m + 3n$

b) $m + 3n$

c) $3m + n$

d) $3mn$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

$(b + c)a = ba + ca$

Multiply EVERY term inside the parentheses.

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Solve each equation.

1. $v - 9 = 14$

a) $v = 23$	**b)** $v = 22$
c) $v = -5$	**d)** $v = 5$

Solution:

Solve each equation.

2. $44 = t - 72$

a) $t = 116$	**b)** $t = -28$
c) $t = 108$	**d)** $t = 28$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation.

3. $-61 = d + (-18)$

a) $d = 79$	**b)** $d = 43$
c) $d = -79$	**d)** $d = -43$

Solution:

Solve each equation.

4. $18 + z = 40$

a) $z = -22$	**b)** $z = 20$
c) $z = 58$	**d)** $z = 22$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation.

7. $18 - (-f) = 91$

a) $f = 73$

b) $f = -109$

c) $f = -73$

d) $f = 109$

Solution:

Solve each equation.

8. $-16 - (-t) = -45$

a) $t = -61$

b) $t = -29$

c) $t = 61$

d) $t = 29$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation.

13. $\frac{3}{4} = w + \frac{2}{5}$

a) $w = \frac{23}{20}$	**b)** $w = \frac{5}{9}$
c) $w = \frac{7}{20}$	**d)** $w = -\frac{7}{20}$

Solution:

Solve each equation.

14. $-\frac{1}{2} + a = \frac{5}{8}$

a) $a = \frac{9}{8}$	**b)** $a = \frac{1}{8}$
c) $a = -\frac{1}{8}$	**d)** $a = \frac{5}{16}$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation.

15. $-\frac{t}{7} = \frac{1}{15}$

a) $t = \frac{1}{105}$	**b)** $t = -\frac{15}{7}$
c) $t = \frac{7}{15}$	**d)** $t = -\frac{7}{15}$

Solution:

Solve each equation.

16. $-\frac{5}{7} = y - 2$

a) $y = \frac{19}{7}$	**b)** $y = \frac{9}{7}$
c) $y = -\frac{19}{7}$	**d)** $y = -\frac{9}{7}$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation.

17. $v + 914 = -23$

a) $v = 891$	**b)** $v = -937$
c) $v = 937$	**d)** $v = -891$

Solution:

Solve each equation.

18. $447 + x = -261$

a) $x = -186$	**b)** $x = -708$
c) $x = 186$	**d)** $x = 708$

Solution:

Hint

Use the inverse operation.

$x + a = b \rightarrow x = b - a$

$x - a = b \rightarrow x = b + a$

$-(-a) = +a$

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Solve each equation or formula for the variable indicated.

11. $u = vw + z$, for v

a) $v = u - z - w$	**b)** $v = w(u - z)$
c) $v = \frac{u - z}{w}$	**d)** $v = \frac{u + z}{w}$

Solution:

Solve each equation or formula for the variable indicated.

12. $x = b - cd$, for c

a) $c = \frac{x - b}{d}$	**b)** $c = \frac{b + x}{d}$
c) $c = \frac{b - x}{d}$	**d)** $c = b - x - d$

Solution:

Hint

Treat the other letters like numbers.

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation or formula for the variable indicated.

13. $fg - 9h = 10j$, for g

a) $g = \frac{10j + 9h}{f}$	**b)** $g = f(10j + 9h)$
c) $g = \frac{10j - 9h}{f}$	**d)** $g = 10j + 9h - f$

Solution:

Solve each equation or formula for the variable indicated.

14. $10m - p = -n$, for m

a) $m = 10(p - n)$	**b)** $m = \frac{p + n}{10}$
c) $m = \frac{p - n}{10}$	**d)** $m = \frac{n - p}{10}$

Solution:

Hint

Treat the other letters like numbers.

Undo + and − first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation or formula for the variable indicated.

15. $r = \frac{2}{3}t + v$, for t

a) $t = \frac{3(r - v)}{2}$

b) $t = \frac{3(r + v)}{2}$

c) $t = \frac{3r}{2} - v$

d) $t = \frac{2(r - v)}{3}$

Solution:

Solve each equation or formula for the variable indicated.

16. $\frac{5}{9}v + w = z$, for v

a) $v = \frac{9(z + w)}{5}$

b) $v = \frac{5(z - w)}{9}$

c) $v = \frac{9(z - w)}{5}$

d) $v = \frac{9z}{5} - w$

Solution:

Hint

Treat the other letters like numbers.

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation or formula for the variable indicated.

17. $\frac{10ac - x}{11} = -3$, for a

a) $a = \frac{x - 3}{10c}$

b) $a = \frac{x - 33}{10c}$

c) $a = \frac{x + 33}{10c}$

d) $a = \frac{-33 - x}{10c}$

Solution:

Solve each equation or formula for the variable indicated.

18. $\frac{df + 10}{6} = g$, for f

a) $f = \frac{6(g - 10)}{d}$

b) $f = \frac{6g + 10}{d}$

c) $f = \frac{6g - 10}{d}$

d) $f = \frac{g - 10}{6d}$

Solution:

Hint

Treat the other letters like numbers.

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Identify the property of equality used to justify each statement.

1. If $4 + 17 = 21$, then $21 = 4 + 17$.

a) Symmetric Property	**b)** Transitive Property
c) Substitution Property	**d)** Reflexive Property

Solution:

Identify the property of equality used to justify each statement.

2. $x + 3 = x + 3$

a) Symmetric Property	**b)** Transitive Property
c) Additive Identity	**d)** Reflexive Property

Solution:

Hint

Reflexive: a = a

Symmetric: if a = b, then b = a

Transitive: if a = b and b = c, then a = c

Substitution: if a = b, a can replace b

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Identify the property of equality used to justify each statement.

3. If 16 = 9 + 7, then 9 + 7 = 16.

a) Multiplicative Identity	**b)** Transitive Property
c) Reflexive Property	**d)** Symmetric Property

Solution:

Identify the property of equality used to justify each statement.

4. If 6 + 2 = 4 + 4 and 4 + 4 = 8, then 6 + 2 = 8.

a) Reflexive Property	**b)** Symmetric Property
c) Transitive Property	**d)** Additive Identity

Solution:

Hint

Reflexive: a = a

Symmetric: if a = b, then b = a

Transitive: if a = b and b = c, then a = c

Substitution: if a = b, a can replace b

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Use the given property of equality to complete each statement.

5. If 23 + 14 = 37, then 37 = 23 + ___ (Symmetric Property of Equality)

a) 37	**b)** 51
c) 14	**d)** 23

Solution:

Use the given property of equality to complete each statement.

6. If a + 5 = b + 3 and a + 5 = 12, then b + 3 = ___ (Transitive Property of Equality)

a) 12	**b)** 5
c) 17	**d)** a

Solution:

Hint

Reflexive: a = a

Symmetric: if a = b, then b = a

Transitive: if a = b and b = c, then a = c

Substitution: if a = b, a can replace b

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Use the given property of equality to complete each statement.

7. If 34 = 19 + 15, then 19 + 15 = ___ (Symmetric Property of Equality)

a) 15	**b)** 34
c) 49	**d)** 19

Solution:

Use the given property of equality to complete each statement.

8. b + 5 + 12 = ___ (Reflexive Property of Equality)

a) b	**b)** 17
c) 5 + 12	**d)** b + 5 + 12

Solution:

Hint

Reflexive: a = a

Symmetric: if a = b, then b = a

Transitive: if a = b and b = c, then a = c

Substitution: if a = b, a can replace b

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TOLL ROADS The table shows highway tolls between exits.

9a. Julio travels from Exit 8 to Exit 15. How much is his toll?

Entered	Exit 8	Exit 10	Exit 15	Exit 18
Exited	Exit 10	Exit 15	Exit 18	Exit 22
Toll	$0.25	$1.00	$0.50	$0.75

a) $1.00

b) $1.25

c) $1.75

d) $0.75

Solution:

Hint

Reflexive: a = a

Symmetric: if a = b, then b = a

Transitive: if a = b and b = c, then a = c

Substitution: if a = b, a can replace b

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Solve each equation. Check your solution.

1. $7c + 12 = -4c + 78$

a) $c = -6$	**b)** $c = 9$
c) $c = 22$	**d)** $c = 6$

Solution:

Solve each equation. Check your solution.

2. $2m - 13 = -8m + 27$

a) $m = 1.4$	**b)** $m = 10$
c) $m = 4$	**d)** $m = -4$

Solution:

Hint

1) Distribute.

2) Move the variables to one side.

3) Move the numbers to the other side.

4) Divide by the coefficient.

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

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Solve each equation. Check your solution.

3. $9x - 4 = 2x + 3$

a) $x = -1$	**b)** $x = 1$
c) $x = 7$	**d)** $x = \frac{1}{11}$

Solution:

Solve each equation. Check your solution.

4. $6 + 3t = 8t - 14$

a) $t = 1.6$	**b)** $t = 20$
c) $t = -4$	**d)** $t = 4$

Solution:

Hint

1) Distribute.

2) Move the variables to one side.

3) Move the numbers to the other side.

4) Divide by the coefficient.

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

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Solve each equation. Check your solution.

5. $\frac{b-4}{6} = \frac{b}{2}$

a) $b = -1$

b) $b = 4$

c) $b = 2$

d) $b = -2$

Solution:

Solve each equation. Check your solution.

6. $\frac{3v+12}{6} = \frac{4v}{3}$

a) $v = -\frac{12}{5}$

b) $v = 12$

c) $v = \frac{12}{5}$

d) $v = \frac{5}{12}$

Solution:

Hint

1) Distribute.

2) Move the variables to one side.

3) Move the numbers to the other side.

4) Divide by the coefficient.

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

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Use the Distributive Property to rewrite and evaluate each expression.

a. $5 \cdot 99$

a) $5(100 + 1) = 505$	**b)** $5(100) - 1 = 499$
c) $5(100 - 1) = 495$	**d)** $5(100 - 9) = 455$

Solution:

Use the Distributive Property to rewrite and evaluate each expression.

b. $4 \cdot 1002$

a) $4(100 + 2) = 408$	**b)** $4(1000) + 2 = 4002$
c) $4(1000 - 2) = 3992$	**d)** $4(1000 + 2) = 4008$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

Example: $5 \cdot 99 = 5(100 - 1)$

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Which expression uses the Distributive Property to rewrite and find the exact value?

Check. $7(51)$

a) $51(7 + 3); 510$	**b)** $7(50 + 1); 357$
c) $7(50) + 1; 351$	**d)** $51(7 - 3); 204$

Solution:

Hint

$a(b + c) = ab + ac$

$a(b - c) = ab - ac$

Example: $5 \cdot 99 = 5(100 - 1)$

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Determine whether the function is linear. If it is, state the rate of change.

Ex 3. Use the table:

x	11	8	5	2	−1
y	−5	−3	−1	1	3

a) Linear; rate of change = $-\frac{2}{3}$

b) Linear; rate of change = $-\frac{3}{2}$

c) Not linear

d) Linear; rate of change = $\frac{2}{3}$

Solution:

Hint

rate of change = $\frac{\text{change in y}}{\text{change in x}}$

Same rate for every pair → linear function.

Different rates → not linear.

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Determine whether the function is linear. If it is, state the rate of change.

Ex 4. Use the table:

x	22	29	36	43	50
y	−4	−1	1	4	6

a) Linear; rate of change = $\frac{3}{7}$

b) Not linear

c) Linear; rate of change = $\frac{2}{7}$

d) Linear; rate of change = $\frac{7}{3}$

Solution:

Hint

rate of change = $\frac{\text{change in y}}{\text{change in x}}$

Same rate for every pair → linear function.

Different rates → not linear.

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Solve each proportion. If necessary, round to the nearest hundredth.

13. $\frac{x-3}{5} = \frac{6}{10}$

a) $x = 6$	**b)** $x = -6$
c) $x = 9$	**d)** $x = 3$

Solution:

Solve each proportion. If necessary, round to the nearest hundredth.

14. $\frac{7}{x+9} = \frac{21}{36}$

a) $x = 3$	**b)** $x = -3$
c) $x = 21$	**d)** $x = 12$

Solution:

Hint

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

(cross products)

Then solve the equation.

Solve each proportion. If necessary, round to the nearest hundredth.

15. $\frac{10}{15} = \frac{4}{x-5}$

a) $x = 1$	**b)** $x = 15$
c) $x = 11$	**d)** $x = 6$

Solution:

Solve each proportion. If necessary, round to the nearest hundredth.

16. $\frac{6}{14} = \frac{7}{x-3}$

a) $x = 6$	**b)** $x = 19.33$
c) $x = 16.33$	**d)** $x = 13.33$

Solution:

Hint

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

(cross products)

Then solve the equation.

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Solve each proportion. If necessary, round to the nearest hundredth.

17. $\frac{7}{4} = \frac{f - 4}{8}$

a) $f = 10$	**b)** $f = 18$
c) $f = 22$	**d)** $f = 14$

Solution:

Solve each proportion. If necessary, round to the nearest hundredth.

18. $\frac{3 - y}{4} = \frac{1}{9}$

a) $y = 2.56$	**b)** $y = 2.25$
c) $y = 0.44$	**d)** $y = 3.44$

Solution:

Hint

$\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

(cross products)

Then solve the equation.

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Solve each equation for x. Assume a ≠ 0.

18. $ax + 3 = 23$

a) $x = \frac{26}{a}$	**b)** $x = \frac{20}{a}$
c) $x = \frac{a}{20}$	**d)** $x = 20a$

Solution:

Solve each equation for x. Assume a ≠ 0.

19. $4 = ax - 14$

a) $x = 18a$	**b)** $x = -\frac{10}{a}$
c) $x = \frac{18}{a}$	**d)** $x = \frac{10}{a}$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation for x. Assume a ≠ 0.

20. $ax - 5 = 19$

a) $x = \frac{19}{a}$	**b)** $x = \frac{24}{a}$
c) $x = \frac{14}{a}$	**d)** $x = 24a$

Solution:

Solve each equation for x. Assume a ≠ 0.

21. $6 + ax = -29$

a) $x = -\frac{35}{a}$	**b)** $x = -35a$
c) $x = \frac{35}{a}$	**d)** $x = -\frac{23}{a}$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation for x. Assume a ≠ 0.

22. $\frac{8}{ax} - 5 = -3$

a) $x = \frac{4}{a}$	**b)** $x = \frac{16}{a}$
c) $x = -\frac{4}{a}$	**d)** $x = \frac{a}{4}$

Solution:

Solve each equation for x. Assume a ≠ 0.

23. $18 - ax = 42$

a) $x = -\frac{60}{a}$	**b)** $x = -\frac{24}{a}$
c) $x = \frac{24}{a}$	**d)** $x = \frac{60}{a}$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Solve each equation for x. Assume $a \neq 0$.

24. $5 = \frac{5}{ax} + 1$

a) $x = \frac{5}{4a}$	**b)** $x = \frac{4a}{5}$
c) $x = \frac{4}{5a}$	**d)** $x = \frac{5}{6a}$

Solution:

Solve each equation for x. Assume $a \neq 0$.

25. $-3 = ax + 11$

a) $x = -\frac{8}{a}$	**b)** $x = \frac{14}{a}$
c) $x = -\frac{14}{a}$	**d)** $x = \frac{8}{a}$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

Solve each equation for x. Assume a ≠ 0.

26. $-7 = -ax - 16$

a) $x = -\frac{9}{a}$

b) $x = -\frac{23}{a}$

c) $x = \frac{9}{a}$

d) $x = \frac{23}{a}$

Solution:

Hint

Undo + and − first.

Then undo × and ÷.

$ax + b = c \rightarrow x = \frac{c - b}{a}$

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Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

10. $g(x) = 5(x)$

a) stretched vertically	**b)** stretched horizontally
c) compressed vertically	**d)** translated up 5 units

Solution:

Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

11. $g(x) = \frac{1}{3}(x)$

a) compressed horizontally	**b)** compressed vertically
c) translated down 3 units	**d)** stretched vertically

Solution:

Hint

$g(x) = a \cdot f(x)$:

$|a| > 1 \rightarrow$ vertical stretch

$0 < |a| < 1 \rightarrow$ vertical compression

$g(x) = f(ax)$:

$a > 1 \rightarrow$ horizontal compression

$0 < a < 1 \rightarrow$ horizontal stretch

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Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

12. $g(x) = 1.5(x)$

a) compressed vertically	**b)** stretched vertically
c) stretched horizontally	**d)** translated up 1.5 units

Solution:

Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

13. $g(x) = (3x)$

a) compressed horizontally	**b)** stretched horizontally
c) translated right 3 units	**d)** compressed vertically

Solution:

Hint

$g(x) = a \cdot f(x)$:

$|a| > 1 \rightarrow$ vertical stretch

$0 < |a| < 1 \rightarrow$ vertical compression

$g(x) = f(ax)$:

$a > 1 \rightarrow$ horizontal compression

$0 < a < 1 \rightarrow$ horizontal stretch

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Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

14. $g(x) = (\frac{3}{4}x)$

a) compressed horizontally	**b)** translated left $\frac{3}{4}$ unit
c) stretched vertically	**d)** stretched horizontally

Solution:

Describe the dilation in each function as it relates to the graph of the parent function f(x) = x.

15. $g(x) = (0.4x)$

a) stretched vertically	**b)** stretched horizontally
c) translated down 0.4 unit	**d)** compressed horizontally

Solution:

Hint

$g(x) = a \cdot f(x)$:

$|a| > 1 \rightarrow$ vertical stretch

$0 < |a| < 1 \rightarrow$ vertical compression

$g(x) = f(ax)$:

$a > 1 \rightarrow$ horizontal compression

$0 < a < 1 \rightarrow$ horizontal stretch

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Write each equation in slope-intercept form.

9. $-10x + 2y = 12$

a) $y = 5x + 6$	**b)** $y = 10x + 6$
c) $y = 5x + 12$	**d)** $y = -5x + 6$

Solution:

Write each equation in slope-intercept form.

10. $4y + 12x = 16$

a) $y = -12x + 16$	**b)** $y = 3x + 4$
c) $y = -3x + 16$	**d)** $y = -3x + 4$

Solution:

Hint

Slope-intercept form:

$y = mx + b$

Solve the equation for y.

m = slope, b = y-intercept

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Write each equation in slope-intercept form.

11. $-5x + 15y = -30$

a) $y = 3x - 2$

b) $y = -\frac{1}{3}x - 2$

c) $y = \frac{1}{3}x + 2$

d) $y = \frac{1}{3}x - 2$

Solution:

Write each equation in slope-intercept form.

12. $6x - 3y = -18$

a) $y = 2x + 6$

b) $y = -2x + 6$

c) $y = 2x - 6$

d) $y = 6x + 18$

Solution:

Hint

Slope-intercept form:

$y = mx + b$

Solve the equation for y.

m = slope, b = y-intercept

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Write each equation in slope-intercept form.

13. $-2x - 8y = 24$

a) $y = -4x - 3$

b) $y = -\frac{1}{4}x + 3$

c) $y = \frac{1}{4}x - 3$

d) $y = -\frac{1}{4}x - 3$

Solution:

Write each equation in slope-intercept form.

14. $-4x - 10y = -7$

a) $y = \frac{2}{5}x + \frac{7}{10}$

b) $y = -\frac{5}{2}x + \frac{7}{4}$

c) $y = -\frac{2}{5}x + \frac{7}{10}$

d) $y = -\frac{2}{5}x - \frac{7}{10}$

Solution:

Hint

Slope-intercept form:

$y = mx + b$

Solve the equation for y.

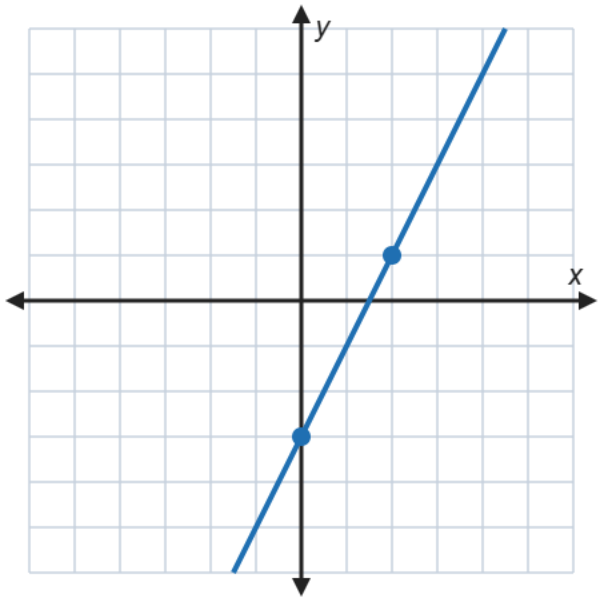
m = slope, b = y-intercept

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

37. Points on the graph: (0, −3) and (2, 1)



a) $y = -2x - 3$

b) $y = 2x + 3$

c) $y = 2x - 3$

d) $y = \frac{1}{2}x - 3$

Solution:

Hint

$m = \frac{y_2 - y_1}{x_2 - x_1}$

b = y-intercept: the point (0, b)

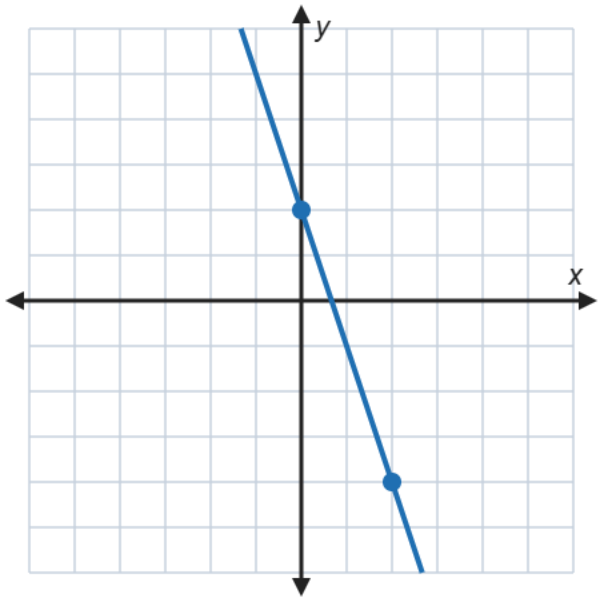
$y = mx + b$

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

38. Points on the graph: (0, 2) and (2, −4)



a) $y = -3x - 2$

b) $y = -3x + 2$

c) $y = 3x + 2$

d) $y = -2x + 3$

Solution:

Hint

$m = \frac{y_2 - y_1}{x_2 - x_1}$

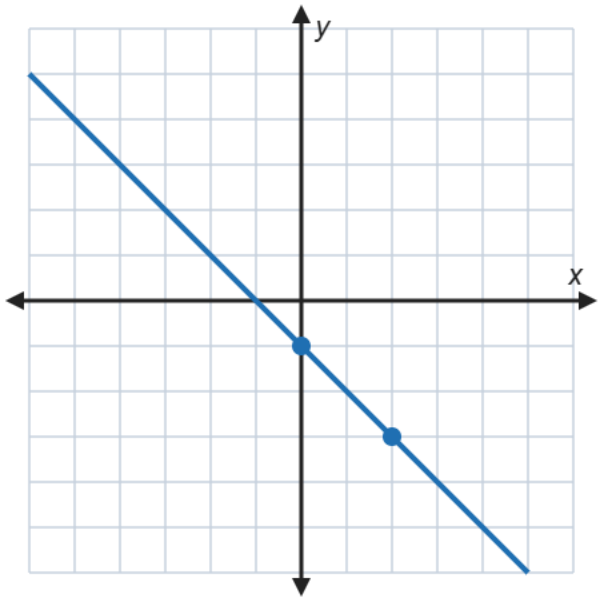
b = y-intercept: the point (0, b)

$y = mx + b$

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

39. Points on the graph: (0, −1) and (2, −3)



a) $y = -2x - 1$

b) $y = x - 1$

c) $y = -x + 1$

d) $y = -x - 1$

Solution:

Hint

$m = \frac{y_2 - y_1}{x_2 - x_1}$

b = y-intercept: the point (o, b)

$y = mx + b$

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Graph each function. State the domain and range.

7. $f(x) = 3[\![x]\!]$

a) D: all real numbers; R: all integers	**b)** D: all integers; R: all real numbers
c) D: all real numbers; R: all integer multiples of 3	**d)** D: all real numbers; R: all real numbers

Solution:

Graph each function. State the domain and range.

8. $f(x) = [\![-x]\!]$

a) D: all real numbers; R: all negative integers	**b)** D: all real numbers; R: all integers
c) D: all real numbers; R: all real numbers	**d)** D: all integers; R: all real numbers

Solution:

Hint

$[\![x]\!]$ = greatest integer $\leq x$

$[\![3.7]\!] = 3$, $[\![-2.3]\!] = -3$

Domain of $[\![x]\!]$: all real numbers

Range of $[\![x]\!]$: all integers

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Graph each function. State the domain and range.

9. $g(x) = -2[\![x]\!]$

a) D: all real numbers; R: all integers

b) D: all real numbers; R: all even integers

c) D: all real numbers; R: all negative even integers

d) D: all integers; R: all real numbers

Solution:

Hint

$[\![x]\!]$ = greatest integer $\leq x$

$[\![3.7]\!] = 3$, $[\![-2.3]\!] = -3$

Domain of $[\![x]\!]$: all real numbers

Range of $[\![x]\!]$: all integers

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Find the slope of a line that passes through the given points.

Ex 6. $(-1, 3)$ and $(4, 1)$

a) $-\frac{5}{2}$	**b)** $-\frac{2}{5}$
c) $\frac{5}{2}$	**d)** $\frac{2}{5}$

Solution:

Find the slope of a line that passes through the given points.

Check. $(5, -4)$ and $(0, 1)$

a) -1	**b)** 1
c) $-\frac{3}{5}$	**d)** 0

Solution:

Hint

$m = \frac{y_2 - y_1}{x_2 - x_1}$

Horizontal line: $m = 0$

Vertical line: m is undefined

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Find the slope of a line that passes through the given points.

Ex 7. $(-2, -5)$ and $(4, -5)$

a) -5	**b)** undefined
c) 6	**d)** 0

Solution:

Find the slope of a line that passes through the given points.

Ex 8. $(-3, 4)$ and $(-3, -2)$

a) undefined	**b)** 6
c) -1	**d)** 0

Solution:

Hint

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Horizontal line: m = 0

Vertical line: m is undefined

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STRUCTURE Suppose $f(x) = 2[\![x - 1]\!]$.

18a. Find $f(1.5)$.

a) 3	**b)** 1
c) 0	**d)** 2

Solution:

STRUCTURE Suppose $f(x) = 2[\![x - 1]\!]$.

18b. Find $f(2.2)$.

a) 4	**b)** 2
c) 1	**d)** 2.4

Solution:

Hint

$[\![x]\!]$ = greatest integer $\leq x$

Work inside first:

$f(2.2) = 2[\![2.2 - 1]\!]$
$= 2[\![1.2]\!]$

$[\![-2.25]\!] = -3$

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STRUCTURE Suppose $f(x) = 2[\![x - 1]\!]$.

18c. Find $f(9.7)$.

a) 17.4	**b)** 16
c) 8	**d)** 18

Solution:

STRUCTURE Suppose $f(x) = 2[\![x - 1]\!]$.

18d. Find $f(-1.25)$.

a) −4	**b)** −4.5
c) −2	**d)** −6

Solution:

Hint

$[\![x]\!]$ = greatest integer $\leq x$

Work inside first:

$f(2.2) = 2[\![2.2 - 1]\!]$
$= 2[\![1.2]\!]$

$[\![-2.25]\!] = -3$

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Determine whether each sequence is an arithmetic sequence. Justify your argument.

28. $-9, -12, -15, -18, \ldots$

a) Yes; common difference −3	**b)** Yes; common difference 3
c) Yes; common difference −9	**d)** No; the differences are not constant

Solution:

Determine whether each sequence is an arithmetic sequence. Justify your argument.

29. $10, 15, 25, 40, \ldots$

a) Yes; common difference 5	**b)** Yes; common difference 15
c) No; the differences are not constant	**d)** Yes; common difference 10

Solution:

Hint

Common difference:

$d = a_2 - a_1$

Arithmetic ↔ d is constant

$a_n = a_1 + (n - 1)d$

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Determine whether each sequence is an arithmetic sequence. Justify your argument.

30. $-10, -5, 0, 5, \ldots$

a) No; the differences are not constant

b) Yes; common difference 5

c) Yes; common difference 10

d) Yes; common difference −5

Solution:

Determine whether each sequence is an arithmetic sequence. Justify your argument.

31. $-5, -3, -1, 1, \ldots$

a) Yes; common difference 2

b) Yes; common difference −2

c) Yes; common difference 1

d) No; the differences are not constant

Solution:

Hint

Common difference:

$d = a_2 - a_1$

Arithmetic ↔ d is constant

$a_n = a_1 + (n - 1)d$

Graph constant functions.

Ex 6. Graph $y = 2$. Which describes the graph?

a) horizontal line through (0, 2)	**b)** line through the origin with slope 2
c) vertical line through (2, 0)	**d)** line with slope 2 and y-intercept 0

Solution:

Graph each equation.

23. $5x + 2y = 8$. Which slope and y-intercept do you use to graph it?

a) slope $-\frac{5}{2}$, y-intercept 8	**b)** slope -5, y-intercept 8
c) slope $\frac{5}{2}$, y-intercept 4	**d)** slope $-\frac{5}{2}$, y-intercept 4

Solution:

Hint

$y = mx + b$

m = slope, b = y-intercept

$y = c \rightarrow$ horizontal line through (0, c)

Solve for y first.

Graph each equation.

24. $4x + 9y = 27$. Which slope and y-intercept do you use to graph it?

a) slope $-\frac{9}{4}$, y-intercept 3	**b)** slope $\frac{4}{9}$, y-intercept 3
c) slope $-\frac{4}{9}$, y-intercept 3	**d)** slope -4, y-intercept 27

Solution:

Graph each equation.

25. $y = 7$. Which describes the graph?

a) line with slope 1 and y-intercept 7	**b)** vertical line through (7, 0)
c) horizontal line through (0, 7)	**d)** line through the origin with slope 7

Solution:

Hint

$y = mx + b$

m = slope, b = y-intercept

$y = c \rightarrow$ horizontal line through (0, c)

Solve for y first.

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Graph each equation.

26. $y = -\frac{2}{3}$. Which describes the graph?

a) line with slope $-\frac{2}{3}$ through the origin	**b)** line with slope 1 and y-intercept $-\frac{2}{3}$
c) vertical line through $(-\frac{2}{3}, 0)$	**d)** horizontal line through $(0, -\frac{2}{3})$

Solution:

Graph each equation.

27. $21 = 7y$. Which describes the graph?

a) line with slope 7 and y-intercept 21	**b)** horizontal line through (0, 21)
c) horizontal line through (0, 3)	**d)** vertical line through (3, 0)

Solution:

Hint

$y = mx + b$

m = slope, b = y-intercept

$y = c \rightarrow$ horizontal line through (0, c)

Solve for y first.

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Graph each equation.

28. 3y − 6 = 2x. Which slope and y-intercept do you use to graph it?

a) slope $\frac{2}{3}$, y-intercept 2

b) slope $\frac{2}{3}$, y-intercept 6

c) slope $-\frac{2}{3}$, y-intercept 2

d) slope $\frac{3}{2}$, y-intercept 2

Solution:

Hint

y = mx + b

m = slope, b = y-intercept

y = c → horizontal line through (0, c)

Solve for y first.

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Write a verbal expression for each algebraic expression.

1. $4q$

a) 4 more than q	**b)** the product of 4 and q
c) q divided by 4	**d)** 4 less than q

Solution:

Write a verbal expression for each algebraic expression.

2. $\frac{1}{8}y$

a) 8 times y	**b)** one eighth of y
c) 8 divided by y	**d)** one eighth more than y

Solution:

Hint

$x^2 \rightarrow$ x squared

$x^3 \rightarrow$ x cubed

$x^n \rightarrow$ x to the nth power

$ab \rightarrow$ product of a and b

$\frac{a}{b} \rightarrow$ a divided by b

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Write a verbal expression for each algebraic expression.

3. $15 + r$

a) the product of 15 and r	**b)** r less than 15
c) the sum of 15 and r	**d)** 15 divided by r

Solution:

Write a verbal expression for each algebraic expression.

4. $w - 24$

a) 24 more than w	**b)** 24 less than w
c) w less than 24	**d)** the product of w and 24

Solution:

Hint

$x^2 \rightarrow$ x squared

$x^3 \rightarrow$ x cubed

$x^n \rightarrow$ x to the nth power

$ab \rightarrow$ product of a and b

$\frac{a}{b} \rightarrow$ a divided by b

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Write a verbal expression for each algebraic expression.

5. $3x^2$

a) 3 times x times 2	**b)** x squared divided by 3
c) 3 more than x squared	**d)** 3 times x squared

Solution:

Write a verbal expression for each algebraic expression.

6. $\frac{r^4}{9}$

a) 4 times r divided by 9	**b)** r to the fourth power times 9
c) 9 divided by r to the fourth power	**d)** r to the fourth power divided by 9

Solution:

Hint

x^2 → x squared

x^3 → x cubed

x^n → x to the nth power

ab → product of a and b

$\frac{a}{b}$ → a divided by b

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Write a verbal expression for each algebraic expression.

7. $2a + 6$

a) twice the sum of a and 6	**b)** 6 less than twice a
c) 2 more than 6 times a	**d)** 6 more than twice a

Solution:

Write a verbal expression for each algebraic expression.

8. $r^4 \cdot t^3$

a) r cubed times t to the fourth power	**b)** r to the fourth power plus t cubed
c) 4r times 3t	**d)** r to the fourth power times t cubed

Solution:

Hint

$x^2 \rightarrow$ x squared

$x^3 \rightarrow$ x cubed

$x^n \rightarrow$ x to the nth power

$ab \rightarrow$ product of a and b

$\frac{a}{b} \rightarrow$ a divided by b

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Write a verbal expression for each algebraic expression.

9. $25 + 6x^2$

a) 25 plus 6 times x squared	**b)** 25 plus 6 plus x squared
c) 25 plus 6 times x times 2	**d)** 25 times 6 times x squared

Solution:

Write a verbal expression for each algebraic expression.

10. $6f^2 + 5f$

a) 6 times f squared minus 5 times f	**b)** 6 times f squared plus 5 times f
c) 11 times f squared	**d)** 6 times f times 2 plus 5 times f

Solution:

Hint

$x^2 \rightarrow$ x squared

$x^3 \rightarrow$ x cubed

$x^n \rightarrow$ x to the nth power

$ab \rightarrow$ product of a and b

$\frac{a}{b} \rightarrow$ a divided by b

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Write a verbal expression for each algebraic expression.

11. $\frac{3a^5}{2}$

a) 3 times a squared divided by 5	**b)** 2 divided by 3 times a to the fifth power
c) 3 times a times 5 divided by 2	**d)** 3 times a to the fifth power divided by 2

Solution:

Write a verbal expression for each algebraic expression.

12. $9(a^2 - 1)$

a) the difference of 9a and 1 squared	**b)** 9 times a squared minus 1
c) 9 times the difference of a squared and 1	**d)** 9 times the sum of a squared and 1

Solution:

Hint

x^2 → x squared

x^3 → x cubed

x^n → x to the nth power

ab → product of a and b

$\frac{a}{b}$ → a divided by b

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Solve each equation. Check your solution.

27. $3x + 8 = 29$

a) $x = -7$	**b)** $x = 12.33$
c) $x = 21$	**d)** $x = 7$

Solution:

Solve each equation. Check your solution.

28. $\frac{a}{6} - 5 = 9$

a) $a = 4$	**b)** $a = 24$
c) $a = 54$	**d)** $a = 84$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

Multiply by the denominator to clear a fraction.

Check your answer.

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Solve each equation. Check your solution.

29. $\frac{5r}{2} - 6 = 19$

a) r = 50	**b)** r = 26
c) r = 5.2	**d)** r = 10

Solution:

Solve each equation. Check your solution.

30. $\frac{n}{3} - 8 = -2$

a) n = −30	**b)** n = 18
c) n = 2	**d)** n = −18

Solution:

Hint

Undo + and − first.

Then undo × and ÷.

Multiply by the denominator to clear a fraction.

Check your answer.

Solve each equation. Check your solution.

31. $5 + \frac{x}{4} = 1$

a) $x = 16$	**b)** $x = -16$
c) $x = -1$	**d)** $x = 24$

Solution:

Solve each equation. Check your solution.

32. $-\frac{h}{3} - 4 = 13$

a) $h = -27$	**b)** $h = 27$
c) $h = 51$	**d)** $h = -51$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

Multiply by the denominator to clear a fraction.

Check your answer.

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Solve each equation. Check your solution.

33. $5(1 + n) = -5$

a) $n = -2$	**b)** $n = 2$
c) $n = 0$	**d)** $n = -1$

Solution:

Solve each equation. Check your solution.

34. $-27 = -6 - 3p$

a) $p = -7$	**b)** $p = 7$
c) $p = -11$	**d)** $p = 11$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

Multiply by the denominator to clear a fraction.

Check your answer.

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Solve each equation. Check your solution.

35. $-\frac{a}{6} + 5 = 2$

a) $a = 18$	**b)** $a = 42$
c) $a = -42$	**d)** $a = -18$

Solution:

Hint

Undo + and – first.

Then undo × and ÷.

Multiply by the denominator to clear a fraction.

Check your answer.

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Answer Key

Q	Page	Answers (exercise number answer)
1	9	11 (d) 12 (d) 13 (d) 14 (c) 15 (b) 16 (c) 17 (d) 18 (d) 19 (c) 20 (c) 21 (c)
2	42	23 (b) 24 (b) 25 (a) 26 (d) 27 (a) 28 (c) 29 (a) 30 (c) 31 (c) 32 (d) 33 (a)
3	81	1 (a) 2 (a) 3 (d) 4 (d) 7 (a) 8 (b) 13 (c) 14 (a) 15 (d) 16 (b) 17 (b) 18 (b)
4	125	11 (c) 12 (c) 13 (a) 14 (c) 15 (a) 16 (c) 17 (b) 18 (c)
5	31	1 (a) 2 (d) 3 (d) 4 (c) 5 (c) 6 (a) 7 (b) 8 (d) 9a (b)
6	97	1 (d) 2 (c) 3 (b) 4 (d) 5 (d) 6 (c)
7	37	a (c) b (d) Check (b)

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Answer Key

Q	Page	Answers (exercise number answer)
8	221	Ex 3 (a) Ex 4 (b)
9	113	13 (a) 14 (a) 15 (c) 16 (b) 17 (b) 18 (a)
10	89	18 (b) 19 (c) 20 (b) 21 (a) 22 (a) 23 (b) 24 (a) 25 (c) 26 (a)
11	248	10 (a) 11 (b) 12 (b) 13 (a) 14 (d) 15 (b)
12	235	9 (a) 10 (d) 11 (d) 12 (a) 13 (d) 14 (c)
13	236	37 (c) 38 (b) 39 (d)
14	263	7 (c) 8 (b) 9 (b)

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Answer Key

Q	Page	Answers (exercise number answer)
15	223	Ex 6 (b) Check (a) Ex 7 (d) Ex 8 (a)
16	265	18a (c) 18b (b) 18c (b) 18d (d)
17	257	28 (a) 29 (c) 30 (b) 31 (a)
18	233, 236	Ex 6 (a) 23 (d) 24 (c) 25 (c) 26 (d) 27 (c) 28 (a)
19	18	1 (b) 2 (b) 3 (c) 4 (b) 5 (d) 6 (d) 7 (d) 8 (d) 9 (a) 10 (b) 11 (d) 12 (c)
20	89	27 (d) 28 (d) 29 (d) 30 (b) 31 (b) 32 (d) 33 (a) 34 (b) 35 (a)

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