

تجميع هيكل مادة الرياضيات للمصف التاسع متقدم (ريفيل)

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مدرسة المعرفة (2) للحلقة والثانية والتعليم الثانوي بنات (8911)

الفرع المدرسي الأول | النطاق التعليمي 2.3



1	Translate equations into sentences	(19-30)	72
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Examples 4 and 5

Write a sentence for each equation.

19. $j + 16 = 35$

20. $4m = 52$

21. $7(p + 23) = 102$

22. $r^2 - 15 = t + 19$

23. $\frac{2}{5}v + \frac{3}{4} = \frac{2}{3}x^2$

24. $\frac{1}{3} - \frac{4}{5}z = \frac{4}{3}y^3$



25. $g + 10 = 3g$

26. $2(t + 4q) = 2q + 4t$

27. $4(a + b) = 9a$

28. $8(2y - 6x) = 4 + 2x$

29. $\frac{1}{2}(f + y) = f - 5$

30. $k^2 - n^2 = 2b$



2

Solve equations by using addition and subtraction

(7-18)

81

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

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

9. $\frac{1}{3}v = -5$

10. $\frac{u}{8} = -4$

11. $\frac{a}{6} = -9$

12. $-\frac{k}{5} = \frac{7}{5}$

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

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

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

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

17. $v + 914 = -23$

18. $447 + x = -261$



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

18. $ax + 3 = 23$

19. $4 = ax - 14$

20. $ax - 5 = 19$

21. $6 + ax = -29$

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

23. $18 - ax = 42$

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

25. $-3 = ax + 11$

26. $-7 = -ax - 16$



Solve each equation. Check your solution.

27. $3x + 8 = 29$

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

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

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

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

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

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

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

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



Solve each equation.

11. $|7 - 2q| = 3$

12. $|4x - 2| = 26$

13. $|w + 1| = 5$

14. $|n + 2| = -1$

15. $|m - 2| = 2$

16. $|5c - 3| = 1$

17. $|2t + 6| = 4$

18. $|8k - 5| = -4$



5

Solve proportions.

(19-28)

113

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

19. $\frac{4v + 7}{15} = \frac{6v + 2}{10}$

20. $\frac{9b - 3}{9} = \frac{5b + 5}{3}$

21. $\frac{2n - 4}{5} = \frac{3n + 3}{10}$

22. $\frac{2}{g + 6} = \frac{4}{5g + 10}$



5

Solve proportions.

(19-28)

113

23. $\frac{x}{3} = \frac{3x + 2}{6}$

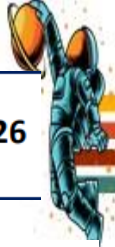
24. $\frac{w + 3}{7} = \frac{w - 1}{8}$

25. $\frac{4q - 3}{5} = \frac{2q + 1}{7}$

26. $\frac{5}{7k + 4} = \frac{2}{2k - 3}$

27. $\frac{m + 1}{9} = \frac{m + 2}{2}$

28. $\frac{j - 5}{2} = \frac{j + 8}{7}$



Find the value of r so the line that passes through each pair of points has the given slope.

38. $(12, 10), (-2, r), m = -4$

39. $(r, -5), (3, 13), m = 8$

40. $(3, 5), (-3, r), m = \frac{3}{4}$

41. $(-2, 8), (r, 4), m = -\frac{1}{2}$

42. $(r, 3), (5, 9), m = 2$

43. $(5, 9), (r, -3), m = -4$

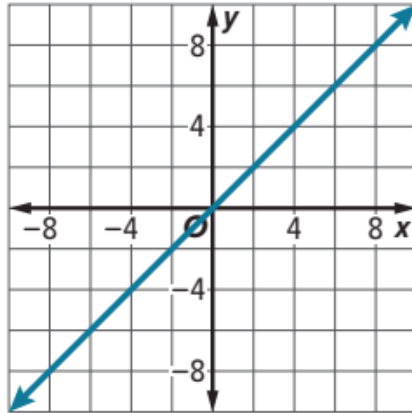
44. $(r, 2), (6, 3), m = \frac{1}{2}$

45. $(r, 4), (7, 1), m = \frac{3}{4}$

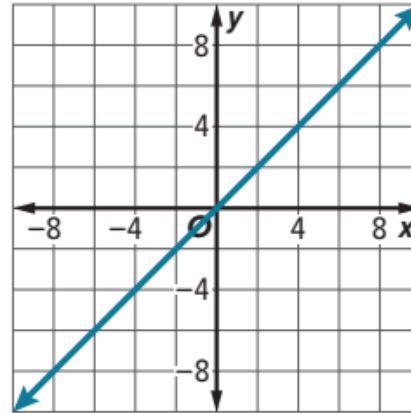


Describe the dilation in each function as it relates to the graph of the parent function.

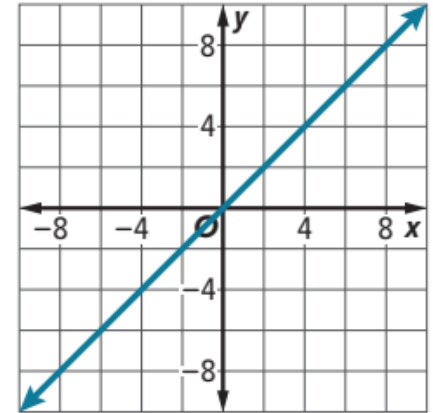
10. $g(x) = 5(x)$



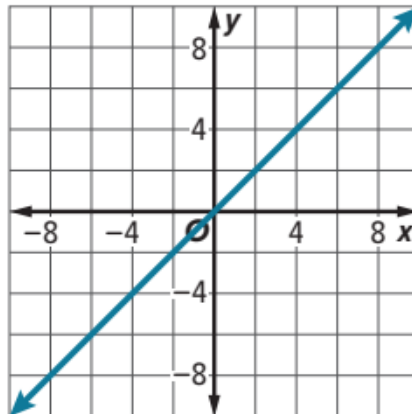
11. $g(x) = \frac{1}{3}(x)$



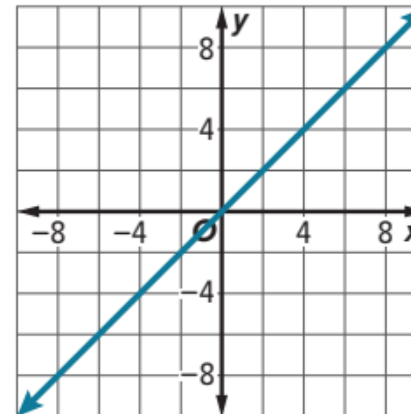
12. $g(x) = 1.5(x)$



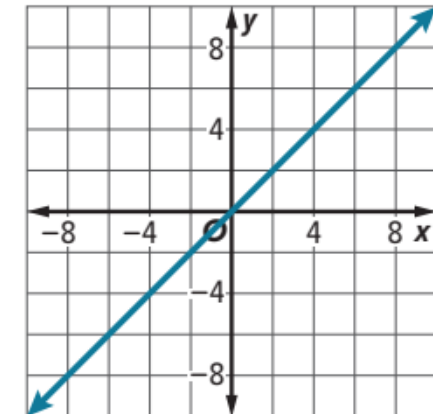
13. $g(x) = (3x)$



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



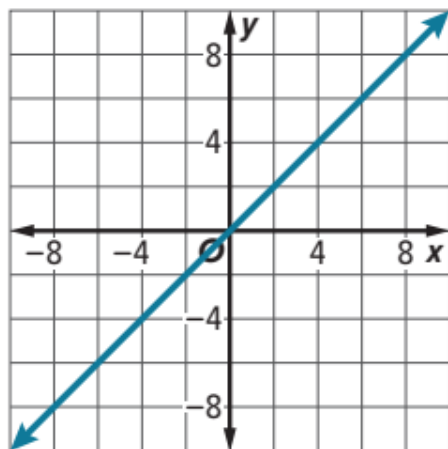
15. $g(x) = (0.4x)$



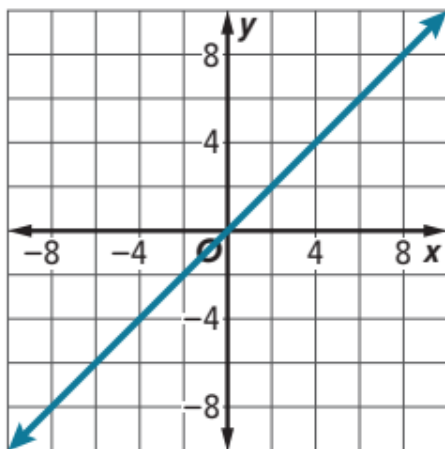


Describe the dilation in each function as it relates to the graph of the parent function.

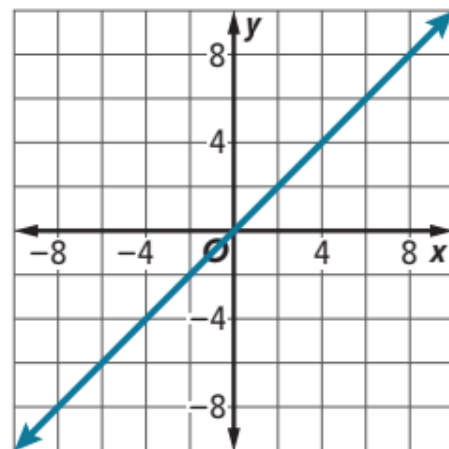
16. $g(x) = -4(x)$



17. $g(x) = -8(x)$



18. $g(x) = -\frac{2}{3}(x)$





8	Apply the arithmetic sequence formula	(19-22)	255
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Use the given arithmetic sequence to write an equation and then find the 7th term of the sequence.

19. $-3, -8, -13, -18, \dots$

20. $-2, 3, 8, 13, \dots$

21. $-11, -15, -19, -23, \dots$

22. $-0.75, -0.5, -0.25, 0, \dots$



Graph each function. State the domain and range.

$$1. f(x) = \begin{cases} \frac{1}{2}x - 1 & \text{if } x > 3 \\ -2x + 3 & \text{if } x \leq 3 \end{cases}$$

$$2. f(x) = \begin{cases} 2x - 5 & \text{if } x > 1 \\ 4x - 3 & \text{if } x \leq 1 \end{cases}$$

$$3. f(x) = \begin{cases} 2x + 3 & \text{if } x \geq -3 \\ -\frac{1}{3}x + 1 & \text{if } x < -3 \end{cases}$$



$$4. f(x) = \begin{cases} 3x + 4 & \text{if } x \geq 1 \\ x + 3 & \text{if } x < 1 \end{cases}$$

$$5. f(x) = \begin{cases} 3x + 2 & \text{if } x > -1 \\ -\frac{1}{2}x - 3 & \text{if } x \leq -1 \end{cases}$$

$$6. f(x) = \begin{cases} 2x + 1 & \text{if } x < -2 \\ -3x - 1 & \text{if } x \geq -2 \end{cases}$$



Describe the translation in $g(x)$ as it relates to the graph of the parent function.

1. $g(x) = |x| - 5$

2. $g(x) = |x + 6|$

3. $g(x) = |x - 2| + 7$

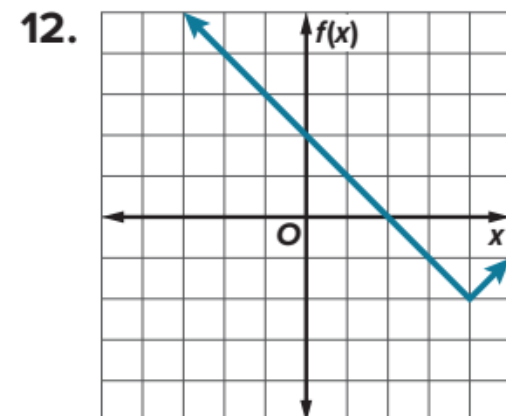
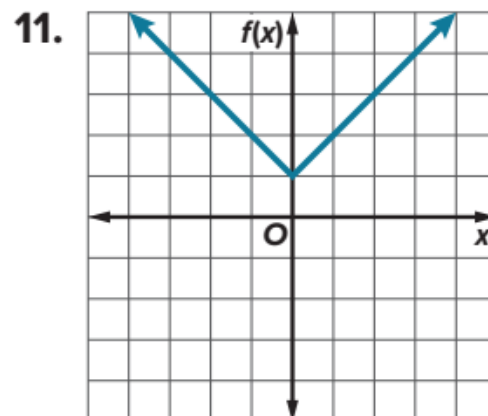
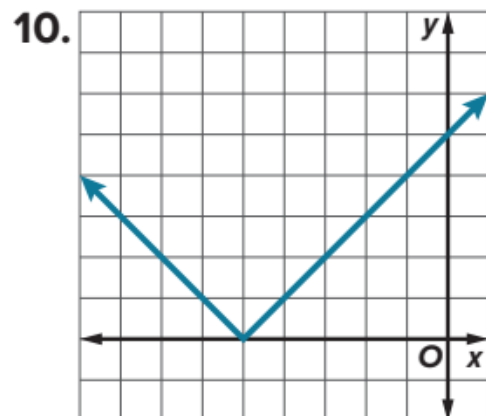
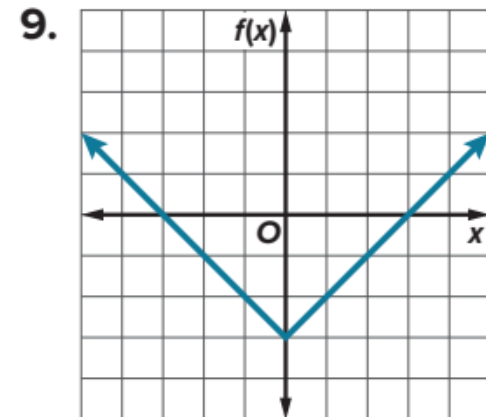
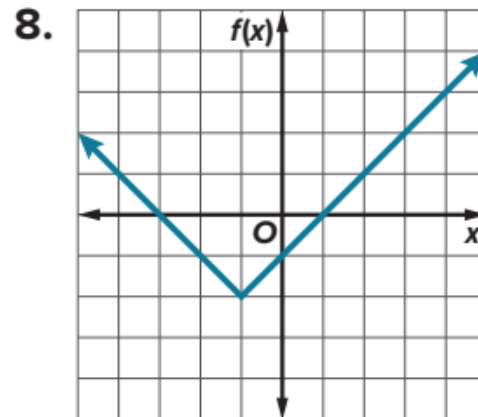
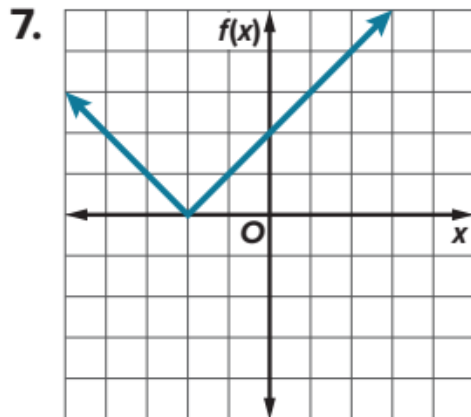
4. $g(x) = |x + 1| - 3$

5. $g(x) = |x| + 1$

6. $g(x) = |x - 8|$



Use the graph of the function to write its equation.





11	Write an equation of a line in slope-intercept form given the slope and one point	(1-6)	291
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Write an equation of the line that passes through the given point and has the given slope.

1. $(4, 2)$; slope $\frac{1}{2}$

2. $(3, -2)$; slope $\frac{1}{3}$

3. $(6, 4)$; slope $-\frac{3}{4}$

4. $(-5, 4)$; slope -3

5. $(4, 3)$; slope $\frac{1}{2}$

6. $(1, -5)$; slope $-\frac{3}{2}$



12	find inverses of linear functions	(16-21)	332
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Find the inverse of each function.

16. $f(x) = 8x - 5$

17. $f(x) = 6(x + 7)$

18. $f(x) = \frac{3}{4}x + 9$

19. $f(x) = -16 + \frac{2}{5}x$

20. $f(x) = \frac{3x + 5}{4}$

21. $f(x) = \frac{-4x + 1}{5}$



13	Solve linear inequalities by using subtraction	(21-30)	347
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21. $11 + m \geq 15$

22. $h - 26 < 4$

23. $8 \leq r - 14$

24. $-7 > 20 + c$

25. $2a \leq -4 + a$

26. $z + 4 \geq 2z$



13	Solve linear inequalities by using subtraction	(21-30)	347
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27. $w - 5 \leq 2w$

28. $3y \leq 2y - 6$

29. $6x + 5 \geq 7x$

30. $-9 + 2a < 3a$



Solve each inequality. Then graph the solution on a number line.

16. $-3(7n + 3) < 6n$

17. $21 \geq 3(a - 7) + 9$

18. $2y + 4 > 2(3 + y)$

19. $3(2 - b) < 10 - 3(b - 6)$

20. $7 + t \leq 2(t + 3) + 2$

21. $8a + 2(1 - 5a) \leq 20$



Solve each inequality. Check your solution.

22. $2(x - 4) \leq 2 + 3(x - 6)$

23. $\frac{2x - 4}{6} \geq -5x + 2$

24. $5.6z + 1.5 < 2.5z - 4.7$

25. $0.7(2m - 5) \geq 21.7$



14	Solve multi-step linear inequalities.	(16-27)	354
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Solve each inequality. Check your solution.

26. $2(-3m - 5) \geq -28$

27. $-6(w + 1) < 2(w + 5)$



Solve each compound inequality. Then graph the solution set.

1. $f - 6 < 5$ and $f - 4 \geq 2$

2. $n + 2 \leq -5$ and $n + 6 \geq -6$

3. $y - 1 \geq 7$ or $y + 3 < -1$

4. $t + 14 \geq 15$ or $t - 9 < -10$



Solve each compound inequality. Then graph the solution set.

5. $-5 < 3p + 7 \leq 22$

6. $-3 \leq 7c + 4 < 18$

7. $5h - 4 \geq 6$ and $7h + 11 < 32$

8. $22 \geq 4m - 2$ or $5 - 3m \leq -13$



Solve each compound inequality. Then graph the solution set.

9. $-y + 5 \geq 9$ or $3y + 4 < -5$

10. $-4a + 13 \geq 29$ and $10 < 6a - 14$

11. $3b + 2 < 5b - 6 \leq 2b + 9$

12. $-2a + 3 \geq 6a - 1 > 3a - 10$



Solve each compound inequality. Then graph the solution set.

13. $10m - 7 < 17m$ or $-6m > 36$

14. $5n - 1 < -16$ or $-3n - 1 < 8$

15. $m + 3 \geq 5$ and $m + 3 < 7$

16. $y - 5 < -4$ or $y - 5 \geq 1$



16	Prove that equations are identities or have no solution.	(25-36)	98
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Solve each equation and state whether the equation has *one solution*, *no solution*, or is an *identity*.

25. $-6y - 3 = 3 - 6y$

26. $\frac{1}{2}(x + 6) = \frac{1}{2}x - 9$

27. $8q + 12 = 4(3 + 2q)$

28. $21(x + 1) - 6x = 15x + 21$



Solve each equation and state whether the equation has *one solution*, *no solution*, or is an *identity*.

29. $12y + 48 - 4y = 8(y - 6)$

30. $8(z + 6) = 4(2z + 12)$

31. $2a + 2 = 3(a + 2)$

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



16	Prove that equations are identities or have no solution.	(25-36)	98
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Solve each equation and state whether the equation has *one solution*, *no solution*, or is an *identity*.

33. $7(c + 9) = 7c + 63$

34. $4k + 3 = \frac{1}{4}(8k + 16)$

35. $3b - 13 + 4b = 7b + 1$

36. $\frac{1}{2}(\frac{1}{2}m - 8) = \frac{1}{4}(m - 16)$



17	Graph linear functions by making tables of values	(1-8)	215
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Graph each equation by making a table.

1. $x = -2$

2. $y = -4$

3. $y = -8x$

4. $3x = y$

5. $y - 8 = -x$

6. $x = 10 - y$



17	Graph linear functions by making tables of values	(1-8)	215
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Graph each equation by making a table.

7. $y = \frac{1}{2}x + 1$

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



Example 3 Constant Rate of Change

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

Find the changes in the x-values and the changes in the y-values.

Notice that the rate of change for each pair of points shown is $-\frac{2}{3}$.

The rates of change are constant, so the function is linear. The rate of change is $-\frac{2}{3}$.

x	y
11	-5
8	-3
5	-1
2	1
-1	3

Example 4 Rate of Change

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

Find the changes in the x-values and the changes in the y-values.

The rates of change are not constant. Between some pairs of points the rate of change is $\frac{3}{7}$, and between the other pairs it is $\frac{2}{7}$. Therefore, this is not a linear function.

x	y
22	-4
29	-1
36	1
43	4
50	6



19	Solve equations for specific variables	(7-18)	124,125
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Solve each equation or formula for the variable indicated.

7. $q - r = r$, for r

8. $4m - t = m$, for m

9. $7a - b = 15a$, for a

10. $-5c + d = 2c$, for c



19	Solve equations for specific variables	(7-18)	124,125
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Solve each equation or formula for the variable indicated.

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

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

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

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



19	Solve equations for specific variables	(7-18)	124,125
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15. $r = \frac{2}{3}t + v$, for t

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

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

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



Write an equation in point-slope form for the line that passes through the given points.

4. $(-4, 6), (-2, 22)$

5. $(1, -3), (4, -15)$

6. $(4, -6), (6, -4)$

7. $(3, 3), (6, 7)$



Solve each compound inequality. Then graph the solution set.

10. $-4a + 13 \geq 29$ and $10 < 6a - 14$

11. $3b + 2 < 5b - 6 \leq 2b + 9$

12. $-2a + 3 \geq 6a - 1 > 3a - 10$



Solve each compound inequality. Then graph the solution set.

13. $10m - 7 < 17m$ or $-6m > 36$

14. $5n - 1 < -16$ or $-3n - 1 < 8$

15. $m + 3 \geq 5$ and $m + 3 < 7$

16. $y - 5 < -4$ or $y - 5 \geq 1$