Simplify.

1) $44 \div 11 + 5 \cdot 7 - 5^2$

14

2) $4 \cdot 9 - 8 + 3$

31

3) $5^3 - (-8) - 12(-2)$

157

4) $\dfrac{-23 - (-15)}{(-18 + 7) - (-5)}$

$\dfrac{4}{3}$

5) $9 - 4(2x - 7)$　$-8x + 37$

6) $6(7x - 3) - 2(x - 1)$

$40x - 16$

Solve using inverse operations.

7) $-3(2x - 9) = 2 - 5(3x + 7)$
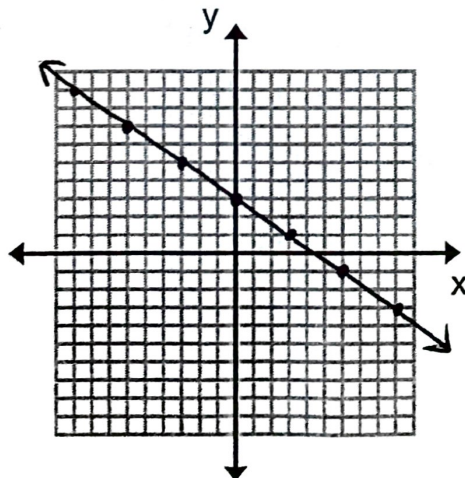
$x = \dfrac{-20}{3} = -6\frac{2}{3}$

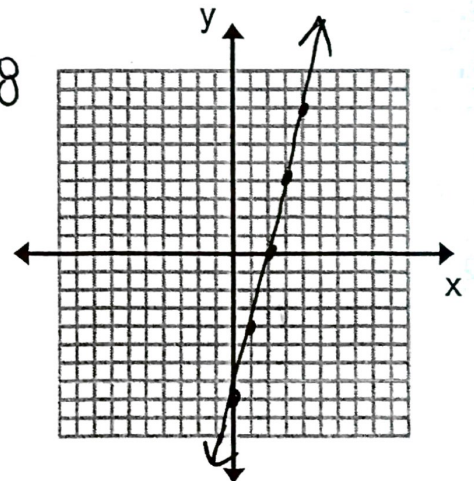8) $-3t + 7 > 25$

$t < -6$

Solve for y. Then graph.

9) $2x + 3y = 9$

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

10) $8x - 2y = 16$

$y = 4x - 8$

For the following questions:
  a) Are the following **arithmetic, geometric,** or **neither**? (if the answer is neither, you are done.)
  b) If the sequence is arithmetic/geometric, write the recursive equation.
  c) If the sequence is arithmetic/geometric, write the explicit equation.

11)   1.4, 4.2, 12.6, 37.8   **12)**   2.3, 6.8, 11.3, 15.8   **13)**   26, 33, 41, 50

a) Geometric

b) $f(1) = 1.4$
$f(x) = f(x-1) \cdot 3$

c) $f(x) = 1.4(3)^{x-1}$

a) Arithmetic

b) $f(1) = 2.3$
$f(x) = f(x-1) + 4.5$

c) $f(x) = 4.5x - 2.2$

a) Neither

Write the **recursive and explicit equations** for each sequence given a table of values:

14)

x	$f(x)$
4	24
5	12
6	6
7	3
8	1.5

R: $f(4) = 24$
$f(x) = f(x-1) \cdot \frac{1}{2}$

E: $f(x) = 24\left(\frac{1}{2}\right)^{x-4}$

15)

x	1	2	3	4
$f(x)$	8	20	50	125

R: $f(1) = 8$
$f(x) = f(x-1) \cdot \frac{5}{2}$

E: $f(x) = 8\left(\frac{5}{2}\right)^{x-1}$

16)

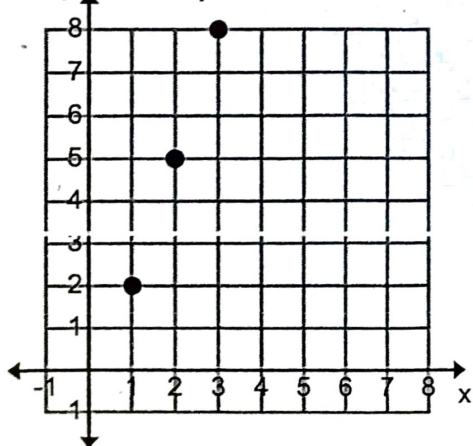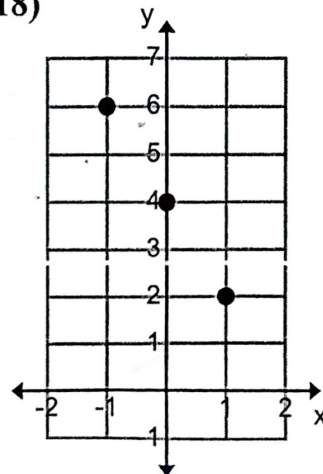| x	-5	-4	-3	-2
$f(x)$	14	8	2	-4

R: $f(-5) = 14$
$f(x) = f(x-1) - 6$

E: $f(x) = -6x - 16$

Use the graph to find the **explicit equation:**
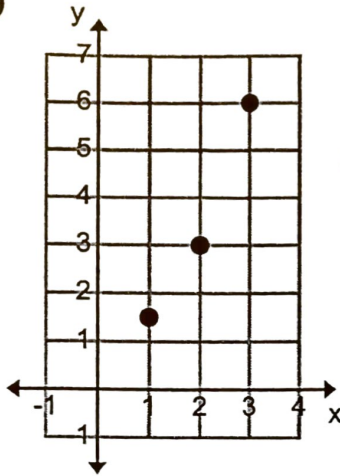
17) $f(x) = 3x - 1$

18) $f(x) = -2x + 4$

Use the graph to find the **explicit equation**:
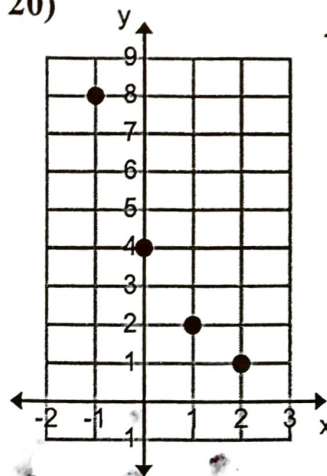
19)

$$f(x) = 1.5(2)^{x-1}$$

or

$$f(x) = 3(2)^{x-2}$$

or

$$f(x) = 6(2)^{x-3}$$

20)

$$f(x) = 8(\tfrac{1}{2})^{x+1}$$

$$= 4(\tfrac{1}{2})^{x}$$

$$= 2(\tfrac{1}{2})^{x-1}$$

$$= (\tfrac{1}{2})^{x-2}$$

Use the following story to answer the questions that follow.

The Jones family decided to do something nice for their neighbors. On the first day, they took treats to five neighbors. They left a note asking each of the families to take treats to four more houses the next day, so that on day 2 there were 20 houses that received treats.

21) Table:

x Day	y Neighbors
1	5
2	20
3	80
4	320
5	1,280

22) Graph: (include labels)
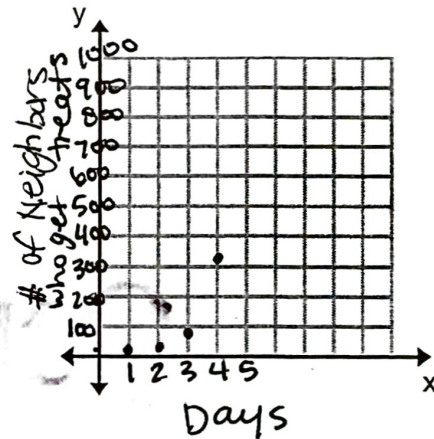
23) Recursive Equation:

$$f(1) = 5$$
$$f(x) = f(x-1) \cdot 4$$

24) Explicit Equation:

$$f(x) = 5(4)^{x-1}$$

Solve each equation for the given variable.

25) $A = \dfrac{1}{2}bh$ for b

$$b = \frac{2A}{h}$$

26) $A = \pi r^2$ for r^2

$$r^2 = \frac{A}{\pi}$$

27) $C = 2\pi r$ for r

$$r = \frac{C}{2\pi}$$

28) $W = \dfrac{a-b}{m}$ for a

$$a = Wm + b$$

29) If $f(x) = 4^x + 10$, what is $f(0)$?

$$f(0) = 11$$

**30)** If $g(x) = 5x^2 + 2$, what is $g(-1.5)$?

$$g(-1.5) = 13.25$$

31) Line j is parallel to the line with the given equation and line j passes through P. Write the equation of line j. $y = 3x + 22$, $P(-4, 1)$

$$y = 3x + 13$$

32) Line k is perpendicular to the line with the given equation and line k passes through P. Write the equation of line k. $y = -8x + 11$, $P(0, -5)$

$$y = \frac{1}{8}x - 5$$

33) Find the length of the missing side. **Write your answer in simplified radical and approximate decimal form.**

$$\sqrt{999} = 3\sqrt{111} \approx 31.6 \text{ yds.}$$

51 yd
a yd
60 yd
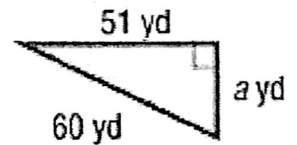
Use the distance formula to find the distance between the following coordinate points. **Write your answer in simplified radical and approximate decimal form.**
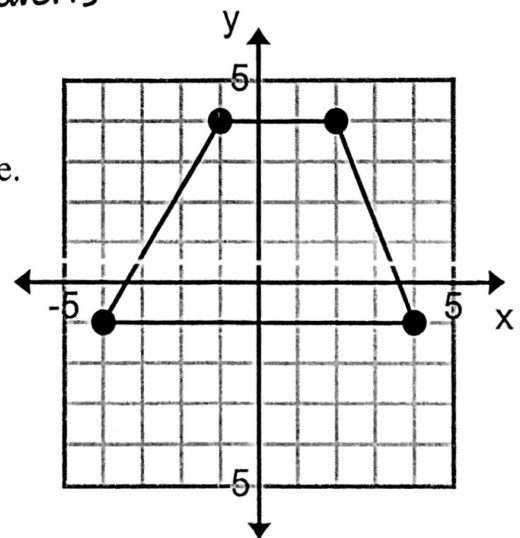
$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

34) $(4,-5)$ $(-9,8)$ $\sqrt{338} = 13\sqrt{2} \approx 18.38$ units

35) Find the perimeter and area of the graphed figure.
A(-1,4) B(2, 4) C(4,-1) D(-4,-1)

$$P = 22.22 \text{ units}$$

$$A = 27.5 \text{ units}^2$$

36) David is opening an account with $3500 at a 1.98% interest rate which is compounded monthly.

a) Write an equation to model his account balance at any given time.

$$y = 3500\left(1 + \frac{.0198}{12}\right)^{12x}$$

b) How much money will David have in his account after 25 years?

$5739.40

37) Costco had 10,000 members in 1980. Each year their membership increases by 30%. The equation to represent this situation is $f(t) = 10,000(1.30)^t$. How many members would Costco be predicted to have had in 2020?

361,188,648 members

38) John bought a car in 2006 for $27,000. Its value is decreased by 4.3% each year.

a) Write an explicit equation.

$$f(t) = 27,000(.957)^t$$

b) Should he sell his car to his friend in 2014 if his friend offers him $13,000? Why or why not?

NO, its worth $18,995.00 so he could get more for it.

For the following questions,
a) Identify whether each equation represents a growth or decay function.
b) Identify the percent of increase/decrease.
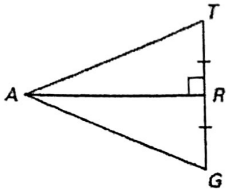
39) $f(x) = 2(1.01)^x$

a) Growth

b) 1%
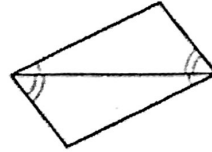
40) $f(x) = 10,000(.62)^x$

a) Decay

b) 38%

A. Decide whether enough information is given to prove that the triangles are congruent.
B. If there IS enough information, state the congruence postulate or theorem you would use.
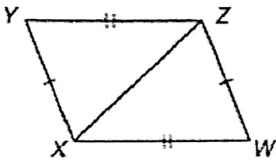**C. If YES, what type of transformation(s) would map one triangle onto the other?**

41)
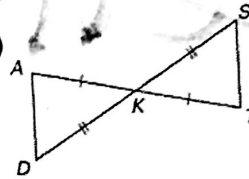

A. (Yes) or No

B. If Yes, SAS

C. reflection across AR

42)

A. (Yes) or No

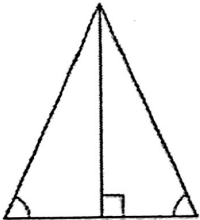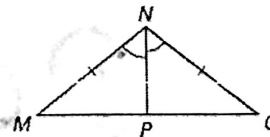B. If Yes, SSS

C. Rotation of 180°

43)

A. (Yes) or No

B. If Yes, AAS

C. reflection across shared side

44)

A. Yes or (No)

B. If Yes, _____

C. _____

45)

A. (Yes) or No

B. If Yes, ASA

C. Rotation of 180°

46)

A. (Yes) or No

B. If Yes, SAS

C. rotation of 180°
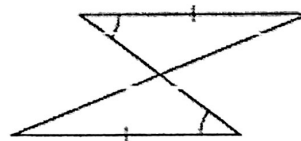
47)
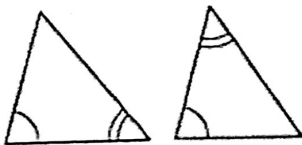

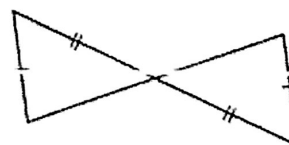A. (Yes) or No

B. If Yes, SAS

C. reflection across NP

48)
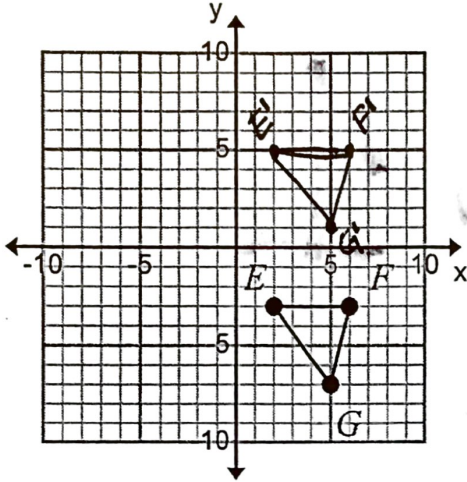

A. (Yes) or No

B. If Yes, AAS

C. rotation of 180°

49)

A. Yes or (No)

B. If Yes, _____

C. _____

Transform each given geometric figure on the coordinate plane as described. Write the new coordinates.

50)
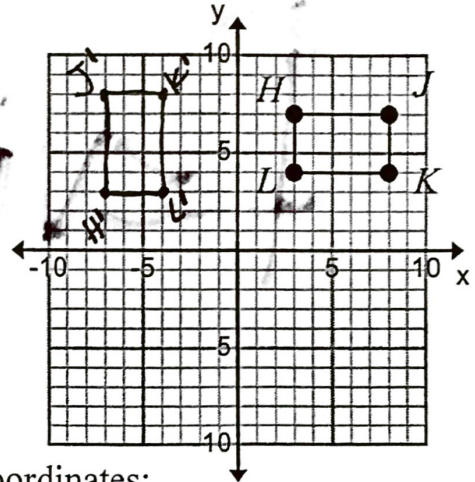
Translate △*EFG* using
$(x, y) \rightarrow (x, y + 8)$
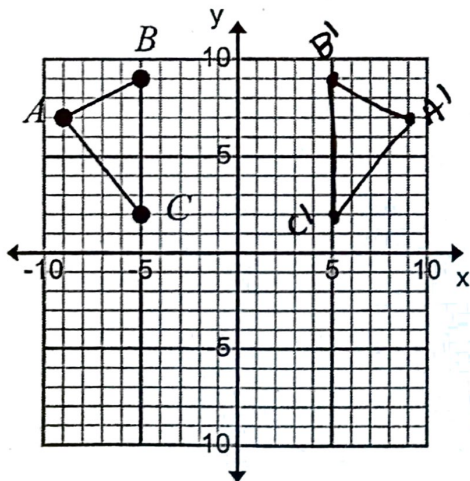

New Coordinates:

E' (2,5)

F'(6,5)

G'(5,1)

51)

Rotate *HJKL* about the origin 90°
counterclockwise.

New Coordinates:

H' (-7,3)

J'(-7,8)

K' (-4,8)

L'(-4,3)

52) Reflect △*ABC* over the *y*-axis.
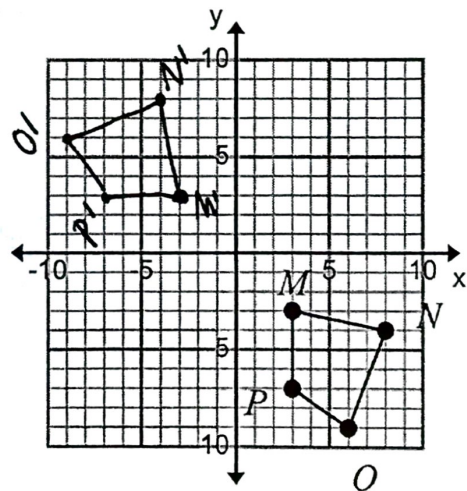

New Coordinates: A'(9,7)

B'(5,9)

C'(5,2)

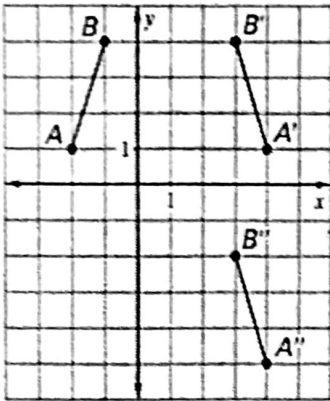**53)** Reflect *MNOP* over the line $y = x$.

New Coordinates: M'(-3,3)   O'(-9,6)

N'(-4,8)   P'(-7,3)

54) Which two transformations were performed to obtain $\overline{A''B''}$ in the diagram?

A. Translate up 6 units, then reflect in $y = 1$

B. Reflect in the x-axis, then translate up 6 units.

C. Reflect in the line $x = 1$, then translate down 6 units.

D. Reflect in the line $y = 1$, then translate down 6 units.

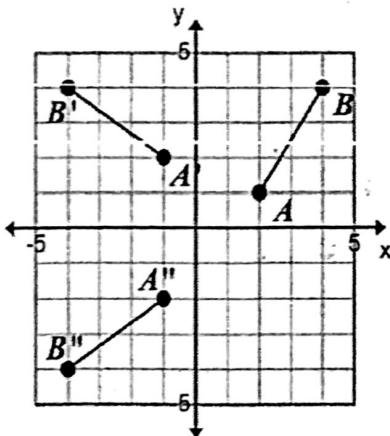**55)** Using the composition below, what are the coordinates of the endpoints $\overline{C''D''}$?

Given: $C(-2,3), D(3,4)$

Rotation: $90°$ clockwise about the origin

Reflection: in the line $x = 1$

A. $C''(5,-2), D''(6,3)$

B. $C''(1,2), D''(2,3)$

C. $C''(-5,-2), D''(-6,3)$

D. $C''(-1,2), D''(-2,-3)$

56) What two transformations were performed to obtain $\overline{A''B''}$ in the diagram?

A. a rotation and a translation

B. a reflection and a translation

C. a rotation and a rotation

D. a rotation and a reflection

57) Translation 1 maps A to A'. Translation 2 maps A' to A''. What translation below maps A to A''?

Translation 1: $(x,y) \rightarrow (x-2, y+6)$

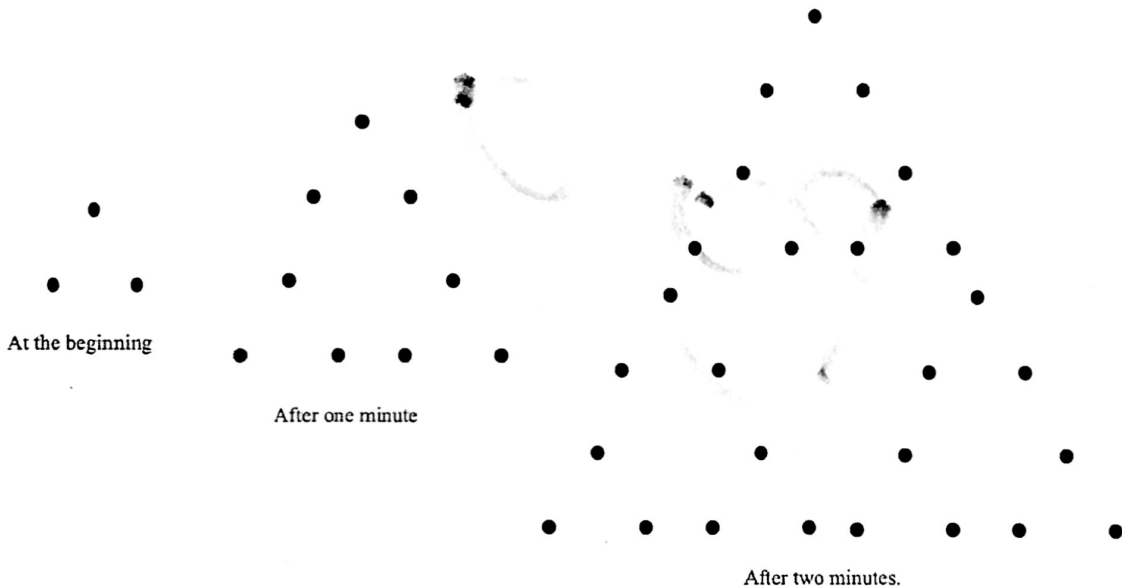Translation 2: $(x,y) \rightarrow (x+7, y-6)$

A. $(x,y) \rightarrow (x-5, y+6)$

B. $(x,y) \rightarrow (x+5, y)$

C. $(x,y) \rightarrow (x+5, y+12)$

D. $(x,y) \rightarrow (x+9, y-12)$

58) For the visual pattern below create the recursive and the explicit function rules.

At the beginning

After one minute

After two minutes.

Recursive Equation:

$f(0) = 3$

$f(x) = f(x-1) \cdot 3$

Explicit Equation:

$f(x) = 3(3)^x$