Name: _____

Waring School Summer Packet

for all students entering Core - grade 7

Hi Friends!

Here is a collection of problems to ponder over the summer to help you keep your math skills fresh. Try all of the problems. We recommend that you tackle about 8-10 problems a week this summer - and you'll stay on track to work through all of them. Simply do your best!

Work through the problems on separate sheets of paper and write up what we math teachers call "solutions". It isn't enough to just give answers (those are at the back of the packet). Your solution sheets are what you will turn in during the first week of classes.

We want to acknowledge that you all are coming off a challenging school year and trying to learn during the pandemic. Most people have lost class time over the past year, and we expect different people will be uncertain about different things. **So our message to you is - please just do your best!** And make note of ideas that feel unfamiliar to you. That will help us in the fall address any learning gaps you may have! We are all in this together - and we will figure it out together as well. We so appreciate your willingness to spend some time doing math this summer!

"What kind of calculator do I need to do this work?"

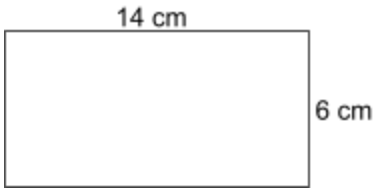
No calculators necessary--just use your brain! :)

"I don't know the answers to some of these!"

You aren't supposed to be perfect (this is school, after all). We have provided the answers at the end of the packet that you should definitely check your work. If you have questions about specific problems, or anything else in this packet, you can look at our FAQ and Resources page or email Julie at jnelson@waringschool.org

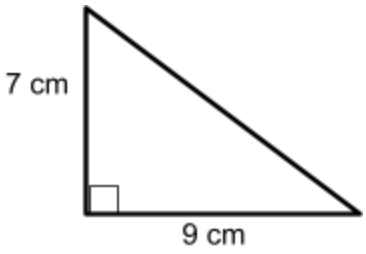
We hope you and your family have a good summer,
Waring Math Teaching Team

1. Find the area and perimeter of the rectangle:



Area = _____ Perimeter = _____

2. Find the area of the triangle:



Area = _____

3. List four multiples of 9:

4. List all of the factors of 24:

5. What is the Lowest Common Multiple (LCM) of 6 and 4?

6. What is the Greatest Common Factor (GCF) of 18 and 33?

7. Classify the following numbers as **Prime** (P) or **Composite** (C). If the number is composite, list one factor that proves it's composite.

   Recall a Prime number has factors ONLY of 1 and itself. For example 3 is Prime because $3 = 1 \times 3$. Composite number is one that is NOT Prime!

   a. 31 b) 27 c) 44

8. Evaluate each expression

   a. $7^2 =$

   b. $3^4 =$

   c) $8 + 14 \div 2 =$

   d) $5^2 + (15 - 2 \times 4) =$

9. Shade the given fraction of each circle:

a) $\frac{1}{12}$ 

b) $\frac{5}{8}$ 

10. Find the missing numbers:

a) $\frac{3}{8} = \frac{?}{24}$

b) $\frac{4}{?} = \frac{12}{15}$

11. Convert from a mixed number to an improper fraction: $8\frac{3}{5} =$

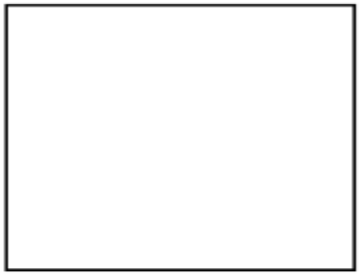
12. Convert from an improper fraction to a mixed number: $\frac{11}{4} =$

13. Add: $\frac{1}{2} + \frac{4}{5} =$

14. Subtract: $6\frac{2}{3} - 2\frac{1}{4} =$

15. Shade ¼ of ⅕ of the box.

What fraction is shaded?



16. Multiply:

$$\frac{3}{7} \times \frac{4}{5}$$

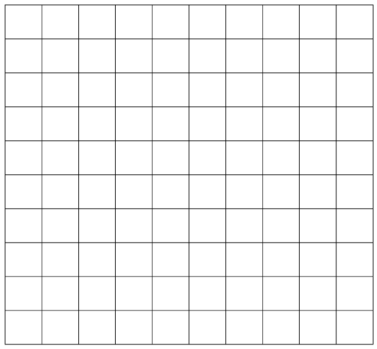
17. Divide:

$$\frac{3}{5} \div \frac{9}{15}$$

18. Anton is browsing the iTunes music store and is excited to see a new collaboration album from Taylor Swift and Lizzo, his two favorite singers. Lizzo sings on ¾ of the songs, while Taylor Swift sings on ⅔ of the songs. Some are duets (where both sing together) and some are solos (which they each sing alone). If they sing 10 songs together, how many songs are on the album?

19. What is ⅜ of 32?

20. Shade 0.53 of the box:



21. Compute: 1.2 x 4.7 =

22. Compute: 8.65 ÷ 0.05 =

23. Convert 57% to a fraction:

24. Tim, Robine, Mike, and Renée are playing 2-on-2 basketball. Mike scores 14 points, Renée scores 8 points, Robine scores 11 points, and Tim scores 3 points.

a. What is the mean number of points scored?

b. What is the median number of points scored?

c. What is the range?

25. What is 60% of 70?

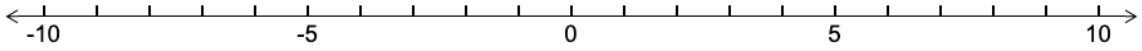
26. 35 is 25% of what number?

27. Write 3.8% as a decimal:

28. At a camp the ratio of swimmers to lacrosse players is 8:5.
If there are 40 swimmers, how many lacrosse players are there?

29. Use the number line to add:

a) -6 + 3 = b) -6 + 10 =



30. Use the symbol < or > to fill in the circles:

a) -6 ◯ -3 b) 6 ◯ -10

31. Put these numbers in order from least to greatest.
You may want to picture a number line to help you.

$$-\frac{5}{6},\ 0.9,\ \frac{1}{10},\ -0.5$$

32. Add or find the missing number.

a) -10 + 15 = b) -3 + -12 =

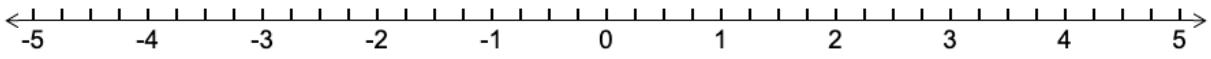
c) -7 + ? = -18 d) -12.5 + 6.6 =

e) 7 + - 4 + 6 = f) $-2\frac{2}{5} + 1 =$

g) 60 + -80= h) -50 + - 40=

33. Find the value of the unknowns.

You may use the number line to help you if you would like.



a) -3 + y = 1

b) -1.5 + x = 0.5

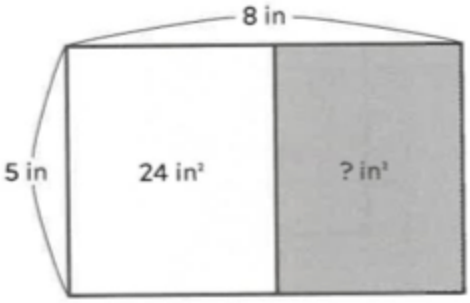
c) -4 = c + ¼

34. Here are some area puzzles.

Your task is to try to be a detective and find the value of the ? in each puzzle. Use what you know about the area and side lengths of rectangles.

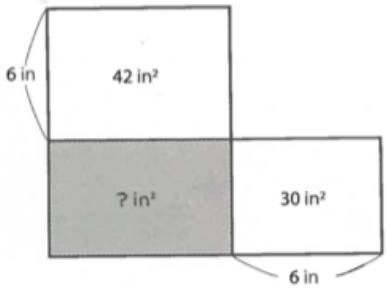
Find the shaded area

1.



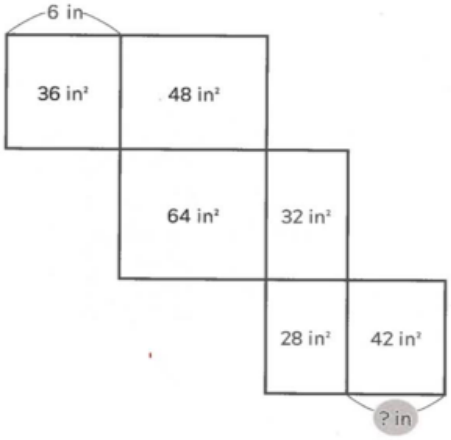
Find the shaded area

2.



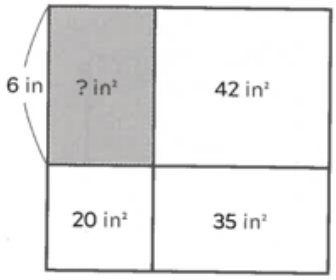
Find the missing side length

3.



Find the shaded area

4.



35. Use the appropriate symbol < or > or = to fill in the circles:

a) 6.4 ◯ 6.25 b) -2.1 ◯ -2.10 c) 0.8 ◯ ½

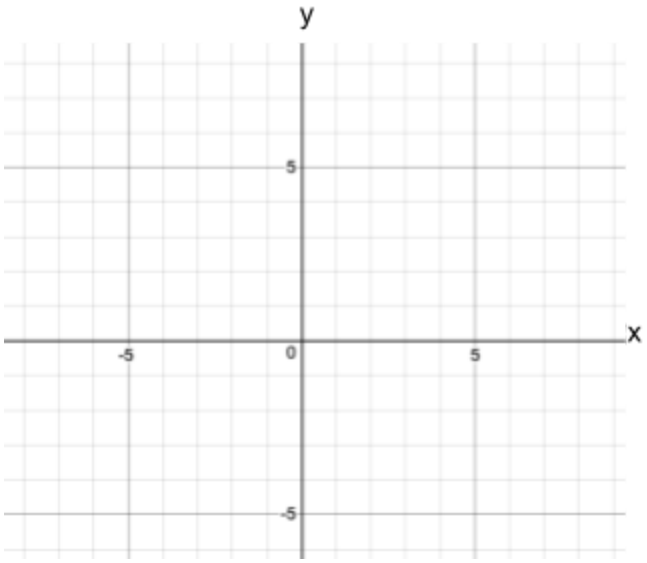
36. Here are the coordinates of three points:

$$(2,2) \quad , \quad (4,6) \quad , \quad (6,2)$$

a) Plot the three points and connect them to make a polygon.

b) Reflect the figure over the *y*-axis.

c) Name the coordinates of the three new points (from the reflection).



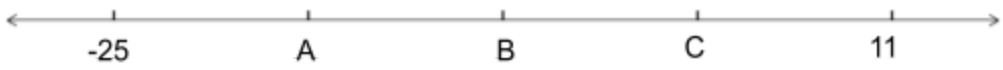
d) Find the area of the figure.

37. On the number lines below, the points shown are evenly spaced out. Find the missing values.

a)

P = _____ Q = _____

b)



A = _____ B = _____ C = _____

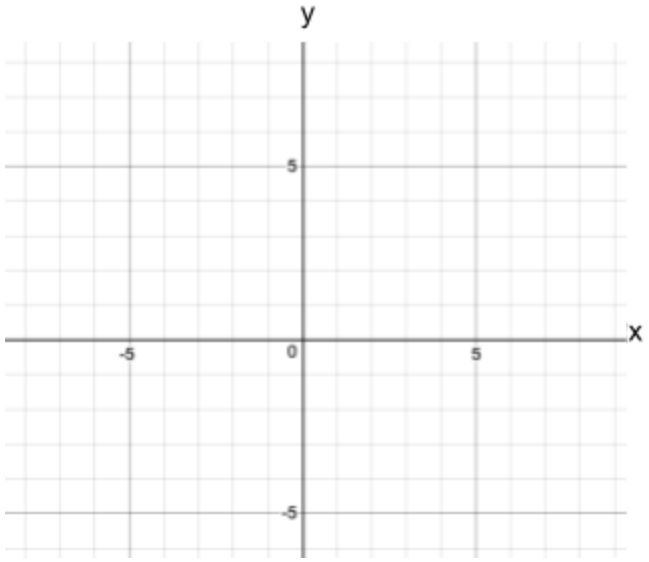
38. The points E, F, G, and H form a square.

E = (-3,3) F = (5,3) G = (5,-5)

a) Plot and label the points E, F, and G on the grid below.

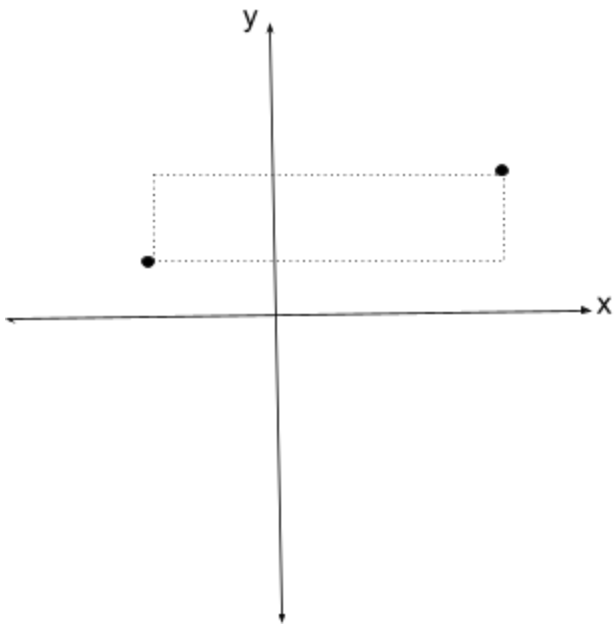
b) Show the point H, and name the coordinates of H. (_____, _____)

c) Find the area of the square. Area = _____



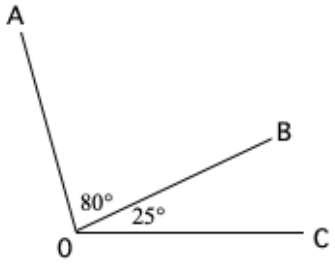
39. The points (-5 , 3) and (10, 6) lie at opposite corners of a rectangle.

What is that rectangle's area?



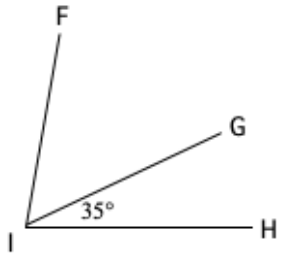
40. Find the measures of the unknown angles:

a)



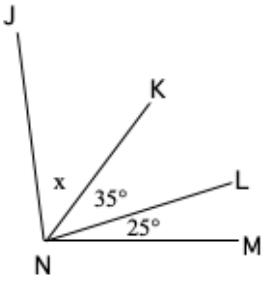
<AOC = ?

b)



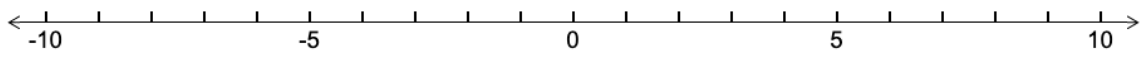
<FIH = 85°
<FIG = ?

c)



<JNM = 100°
x = ?

41. Use the number line to add:



a) -4 + 7 =

b) 3 + -5.5 =

42. Find the missing numbers to make equivalent fractions:

a) $\frac{5}{6} = \frac{?}{24}$

b) $\frac{5}{?} = \frac{15}{21}$

43. Convert from a mixed number to an improper fraction: $6\frac{4}{5}$

44. Convert from an improper fraction to a mixed number: $\frac{25}{9}$

45. A pet store charges $12 for each dog collar and $3 for shipping the order.
Poppy made an order for some dog collars and paid $51.
How many did she buy?

46. Hudson takes 5 quizzes and receives the following scores:

10 , 8 , 9 , 3 , 10

a) What is his median score?

b) What is the mean of his scores?

c) What is the mode?

47. Invent a data set with three numbers that has a mean of 10 and a median of 12.

_____ _____ _____

48. 5 out of every 6 campers like ice cream.
If there are 30 campers who like ice cream, how many campers are there?

49. Each side of an octagon is 3.5 cm long.
Ella turns the octagon completely around 4 times.
How far does the octagon travel?

50. Find the value of the unknown numbers:

a) $x + 9 = 21$

b) $t - 5 = 17$

c) $22 = n \div 2$

d) $3.5 = 5f$

51. The scale on a map indicates that 0.5 cm on the map represents 2 kilometers.

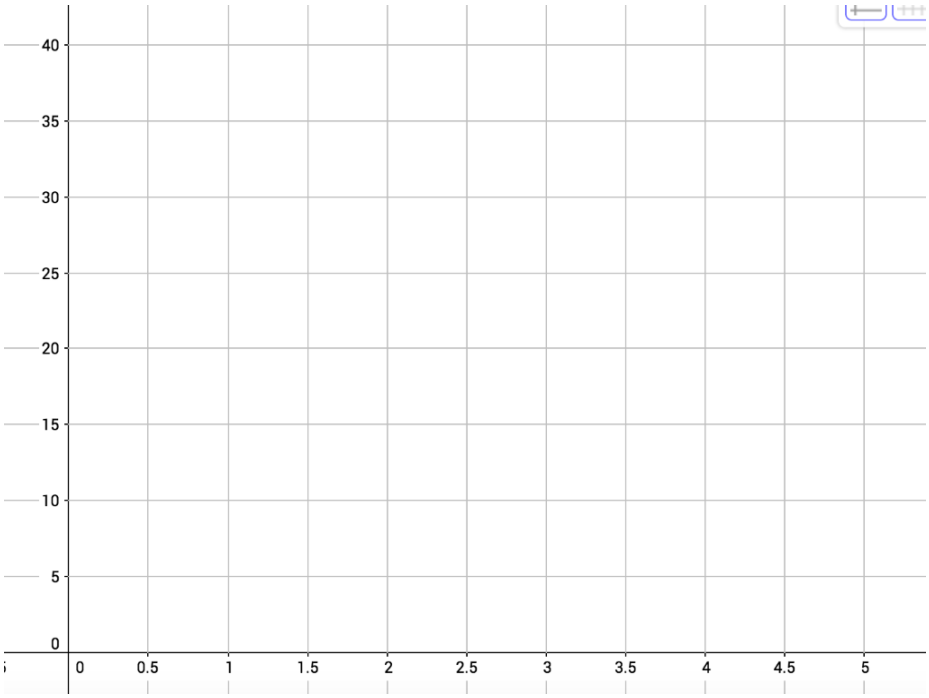
a) Alphaville and Betaville are 6 cm apart on the map.
How many kilometers apart are they in real life?

b) Gamaville is 44 kilometers away from Betaville.
How many centimeters represent this on the map?

52. On a beautiful summer day, Teagan decides to rent a kayak and paddle on the Ipswich River.
The sign says that to rent a kayak, he will have to pay $20 plus an additional $2 for each half hour he is out on the river.

a. Complete the table to show how much he will have to pay for different amounts of time kayaking,
b. Draw a graph that represents the data from the table.

hours	Cost ($)
0.5	
1	
1.5	
2	
2.5	
3	
3.5	
4	



53. Ryan the bicyclist rode 3.4 miles in 20 minutes.
At this rate, how far would he go in an hour?

54. Write the shaded portion of the rectangle as a:

Fraction _____

Decimal _____

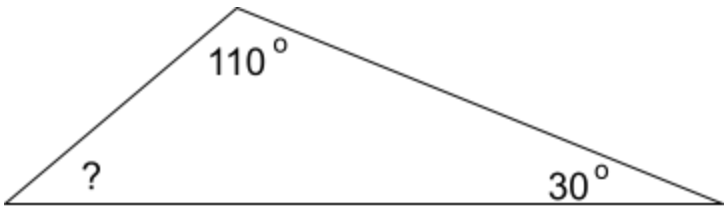
Percent _____

55. a) Shade $\frac{4}{5}$ of the rectangle.

b) Change to a decimal: $\frac{4}{5}$ =

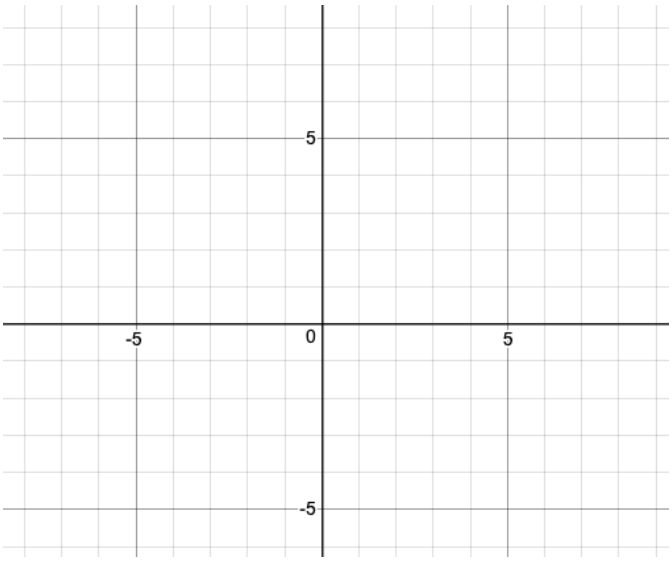
c) Change to a percent: $\frac{4}{5}$ =

56. Find the measure of the unknown angle.



57. Complete the table and graph the points.

x	y = x+2
0	
1	
2	
3	
4	



58. Niamh's soccer team is raising money for the upcoming season, and a kind supporter gives each team member a $25 gift certificate to Soccer-Is-Us. The team decides to put all the gift certificates together and spend it on soccer balls. Each ball costs $15 per ball, and they are able to buy 20 balls. How many players are on the team?

59. What is an exponent? For example, what does 2^3 mean ?

60. Put these numbers in order from least to greatest.

$$\frac{3}{4} \quad , \quad 0.6 \quad , \quad 71\% \quad , \quad \frac{4}{5}$$

Optional Challenge

An eccentric billionaire spends his lunch hour passing out red and blue envelopes full of money. Blue envelopes contain $7 more than red ones.

The billionaire passes out 4 red envelopes and 3 blue envelopes for a total of $147.

How much money is in each envelope?

ANSWER KEY

recall that these are just answers….you need to do the thinking!

1. $A = 84\ cm^2$ $P = 40\ cm$

2. $A = 31.5\ cm^2$

3. 9, 18 , 27, 36, 45, …..many possible answers

4. 1 , 2 , 3 , 4 , 6 , 8 , 12 , 24

5. 12

6. 3

7. a) Prime b) Composite: 3 or 9 c) Composite : 2 , 4 , 11, or 22

8. a) 49 b) 81 c) 15 d) 32

9. a)  b) 

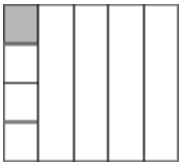
10. a) 9 b) 5

11. $\frac{43}{5}$

12. $2\frac{3}{4}$

13. $1\frac{3}{10}$

14. $4\frac{5}{12}$

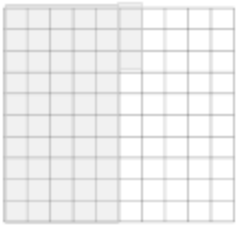
15.  $\frac{1}{20}$

16. $\frac{12}{35}$

17. 1

18. 24

19. 12

20. 

21. 5.64

22. 173

23. $\frac{57}{100}$

24. a) 9 b) 9.5 c) 11

25. 42

26. 140

27. 0.038

28. 25

29. a) -3 b) 4

30. a) < b) >

31. $-\frac{5}{6}$, -0.5 , $\frac{1}{10}$, 0.9

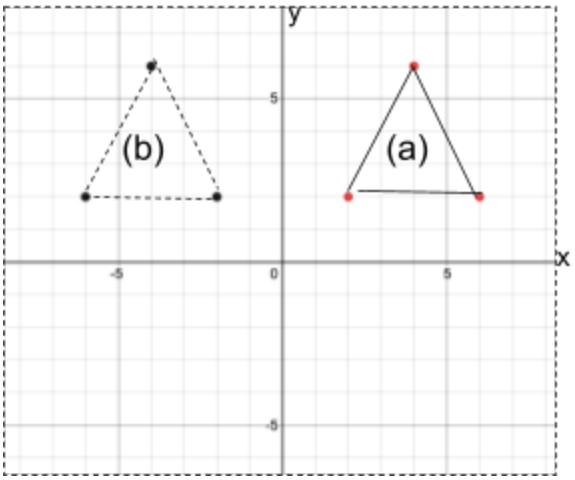
32. a) 5 b) -15 c) -11 d) -5.9 e) 9 f) $-1\frac{2}{5}$ g) -20 h) -90

33. a) $y = 4$ b) $x = 2$ c) $c = -4\frac{1}{4}$

34. 1. $A = 16\ in^2$ 2. $A = 35\ in^2$ 3. ? = 6 in 4. $A = 30\ in^2$

35. a) > b) = c) >

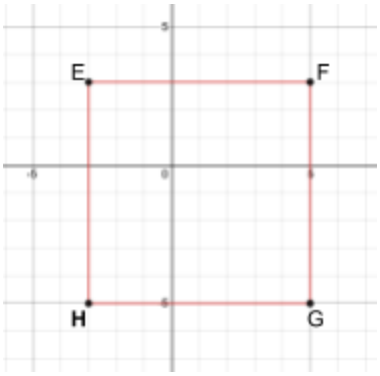
36. a,b)



c) (-2 , 2) (-4 , 6) (-6 , 2)

37. a) P = 14 Q = 30 b) A = -16 B = -7 C = 2

38. a)



b) (-3 , -5) c) 64

39. 45

40. a) 105° b) 50° c) 40°

41. a) 3 b) -2.5

42. a) 20 b) 7

43. $\frac{34}{5}$

44. $2\frac{7}{9}$

45. 4

46. a) 9 b) 8 c) 10

47. Many answers possible. One is 5 , 12 , 13

48. 36

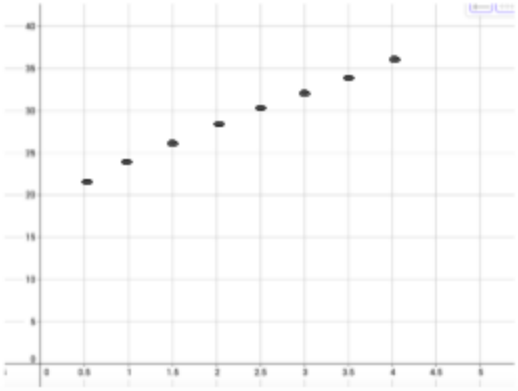
49. 112 cm.

50. a) x = 12 b) t = 22 c) n = 20 d) f = 0.7

51. a) 24 km. b) 11 cm.

52. a, b)

hours	Cost ($)
.5	22
1	24
1.5	26
2	28
2.5	30
3	32
3.5	34
4	36



53. 10.2 miles

54. ¼ , 0.25 , 25%

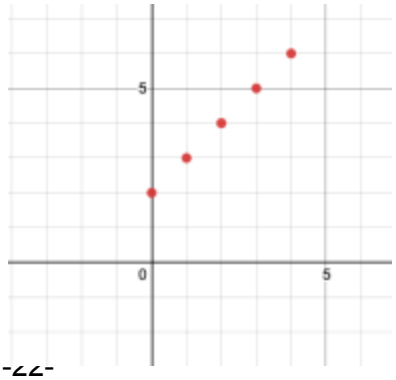
55. a)  b) 0.8 c) 80%

56. 40°

57. a)

2
3
4
5
6

b)



58. 12

59. An exponent shows repeated multiplication. $2^3 = 2 \times 2 \times 2 = 8$

60. 0.6 , 71 % , ¾ , ⅘

Optional: Red envelopes have $18 and Blue Envelopes have $25