Name: _____

Waring School Summer Packet

for all students after Core 6 / Grade 6

Hi Friends!

Here is a collection of problems to ponder over the summer to help you keep your math skills fresh. We so appreciate your willingness to spend some time doing math this summer!

Sometimes when we return to something we've learned before, it may feel unfamiliar the second time around – but it will come back to us more quickly! **Our message to you is - please do your best!**

Write up solutions, not just answers (answers are provided at the end so you can check your work). Bring your completed packets to your math teacher during the first week of classes (after camping trip).

"How do I finish all these problems by the end of the summer?"

> 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.

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

> No calculators necessary- applying your brainpower is enough! :)

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

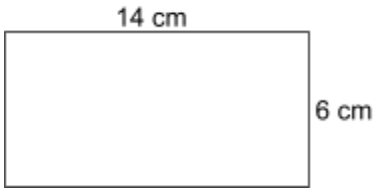
> You aren't supposed to be perfect (this is school, after all). We have provided the answers at the end of the packet and you can check your work.
>
> As a content resource, we are sharing a link to notes that were created by students this year, based on the work done at Waring this year. Find them here: Core 6 Math Notes.

If you have questions about specific problems, or anything else in this packet, you can look at our FAQ and Resources page or email our Core Coordinator, Julie Nelson, at jnelson@waringschool.org

We hope you and your family have a good summer,

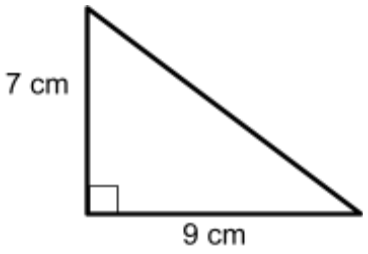
Waring Math Teaching Team

1. Find the area and perimeter of the rectangle.



Area = _____ Perimeter = _____

2. Find the area of the triangle.



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. Shade the given fraction of each circle:

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

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

8. Find missing numbers that make the two fractions equivalent. (If you get stuck, try using a bar diagram.)

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

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

9. Convert from a mixed number to an improper fraction:
(Hint: how many fifths are in 8? Try drawing a diagram if you are stuck.)

$8\frac{3}{5} =$

10. Convert from an improper fraction to a mixed number:

$\frac{11}{4} =$

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

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

13.

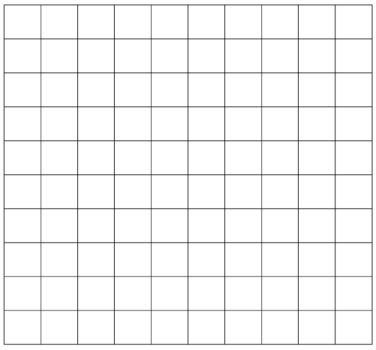
a. Shade ¼ of ⅕ of the bar.

b. What fraction of the whole bar is shaded?

c. Write an **equation** that relates ¼, ⅕, and your answer to part b. (Reminder: an **equation** must have an **equal sign**.)

14. Here is a grid made of 10 columns and 10 rows.

a. Shade 0.53 of the grid.



b. Write 0.53 as a fraction. _____

15.

a. What is $\frac{3}{8}$ of 32?

b. How many $\frac{3}{8}$ are in 32? (This is not the same question as part a and has a very different answer.)

c. Which equation matches the question in part a?

i. $\frac{3}{8} + 32 = x$

ii. $32 - \frac{3}{8} = x$

iii. $\frac{3}{8} \times 32 = x$

iv. $32 \div \frac{3}{8} = x$

d. Which equation matches the question in part b?

i. $\frac{3}{8} + 32 = x$

ii. $32 - \frac{3}{8} = x$

iii. $\frac{3}{8} \times 32 = x$

iv. $32 \div \frac{3}{8} = x$

16. Multiply:

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

17. Divide:

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

18.

a. Estimate: 1.2 x 4.7 is about equal to _____

b. Calculate exactly: 1.2 x 4.7

c. Check: Does your calculation match your estimate? If not, you probably made a place value mistake. Look up how to multiply decimals and try again.

19. For the division example 8.65 ÷ 0.05,

a. Write a division problem with **whole numbers** that has the same result as 8.65 ÷ 0.05

b. Calculate 8.65 ÷ 0.05

c. The calculation you just did asks, "how many five hundredths are in 8.65?" The answer should be fairly large. If your answer doesn't make sense, look up how to divide with decimals and try again.

20. Philippe is buying his school supplies for seventh grade. He buys two notebooks that cost $2.45 each, and four boxes of pencils that cost $.79 per box. If he pays for his purchases with a $20 bill, how much change should he get?

21. An ant travels at a constant rate of 60 cm every 4 minutes.
    a. At what speed does the ant travel per minute?

    b. At what pace does the ant travel per centimeter?

22.
    a. A turtle traveled about 0.288 miles in 3.2 hours. If the turtle traveled at a constant speed, how fast was it moving per hour?

    b. At that rate, how far would the turtle travel in 12 hours? (Tip: you do NOT need to turn the 12 into 12.00 or any other decimal form. If you do, you will be making the calculation much more work than necessary.)

23. My recipe for pizza crust calls for $\frac{3}{4}$ teaspoons of salt. How much salt do I need when I make $1\frac{1}{2}$ batches?

24. Lou-Ann is making lemonade to go with whatever fabulous dessert she is preparing. Her lemonade recipe says to use $\frac{2}{3}$ cup of lemon juice. She plans to make 2 batches. There is about $\frac{1}{6}$ cup of juice in a typical lemon. How many lemons does she need?

25. Miya and Maddie are packing snacks to take on a hiking trip. They have a container that can hold 6 cups of trail mix. It is currently ⅜ full.
    a. How many cups does the container have in it right now?

    b. How many more cups can the container hold?

26. What does 2^3 mean ?

    a. Write 2^3 as an expression without an exponent.

    b. Now evaluate. (Reminder: “Evaluate” means “find the value”.)

27. Evaluate each expression. Remember to use the standard order of operations.

    a. 7^2

    b. 3^4

    c. $8 + 14 \div 2$

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

28. Solve each equation. ("Solve" means find what the variable must equal in order for the equation to be true.)

    a. $12 + n = 31$

    b. $8p = 56$

    c. $14 = 5k$

29. The ratio of swimmers to lacrosse players at a camp is 8 to 5. If there are 40 swimmers, how many lacrosse players are there? (Reminder: tables can be helpful for solving ratio problems. You can also use double number lines or bar diagrams.)

Percent reminders:

- Percent means “out of 100”. Use that idea to help convert between percents, fractions, and decimals.
- Double number lines can be helpful models for working with percentages. One number line represents the percent from 0 to 100. The other represents whatever the whole amount is, from 0 to that number.

30. Write 57% as a fraction.

31. Write 3.8% as a decimal.

32. What is 60% of 70?

33. 35 is 25% of what number?

34. Christian is buying new skates. The skates normally cost $80, but right now they cost $12 less than usual. What percentage of the usual price is the savings?

35. Audrey's Awesome Apparel is having a sale where everything costs 80% of its usual price. If a sweater normally costs $45, what is its sale price?

36. Last weekend 3,150 people visited the amusement park. 56% of the visitors were adults, 16% were teenagers, and 28% were children ages 12 and under. Find the number of adults, teenagers, and children that visited the park.

37. Use the symbol $<$ or $>$ to fill in the blank:

a. -6 _____ -3 b. 6 _____ -10

38. Put these numbers in order from least to greatest. Consider using a number line to help you.

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

39. The symbol $|x|$ is read, "the absolute value of x". It represents the distance that the number x is from 0 on the number line. Find the absolute value of each expression:

a. |5|

b. |-3|

c. |0.28|

d. $|-\frac{2}{7}|$

e. |0|

40. Use the appropriate symbol $<$ or $>$ or $=$ to fill in the blanks.

a. 6.4 ___ 6.25

b. -2.1 ____ -2.10

c. |0.8| ____ |-1.7|

d. $\frac{6}{7}$ ____ $\frac{19}{20}$

41. Find the missing numbers to make equivalent fractions:

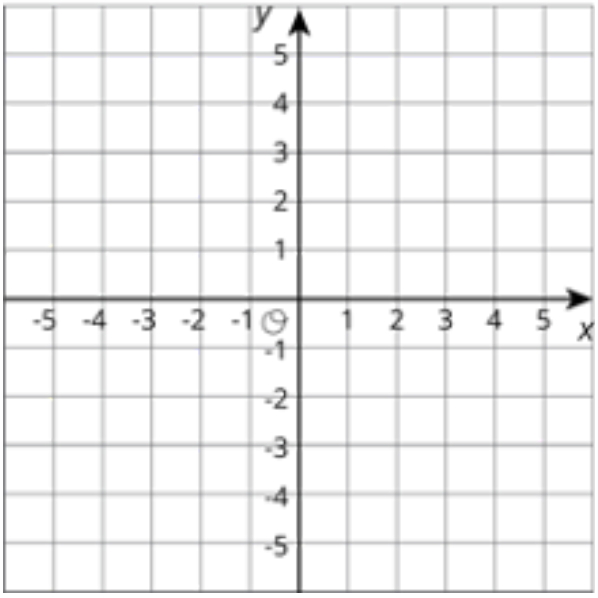
a. $\frac{5}{6} = \frac{?}{24}$

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

42.

a. Draw Polygon ABCDEF by connecting the following points in order:

A: (2, 5) B: (-3, 5) C: (-3, -4) D: (0, -4) E: (0, 0) F: (2, 0)



b. Find the **area** of the polygon.

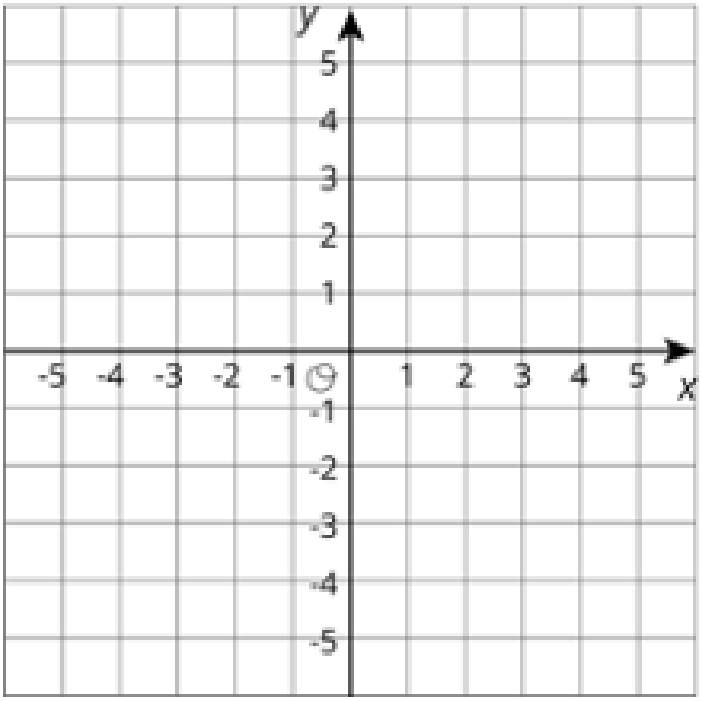
c. Find the **perimeter** of the polygon.

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. The points E, F, G, and H form a **square**.
    a. Plot and label the points E, F, and G on the grid below.

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



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

    c. Find the area of the square.

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

    a. What is that rectangle's **area**?

    b. What is the rectangle's **perimeter?**

47. 5 out of every 6 campers like ice cream. If there are 30 campers who like ice cream, how many campers are there?

48.

    a. A 1.5 quart container of ice cream costs $3.57. What is the cost per quart?

    b. The same brand also comes in 1-pint containers that cost $1.90 each. A pint is equal to half of a quart. Which ice cream is the better buy? Explain or show your reasoning.

    c. The 1-pint containers go on sale. If you buy one container at the full price of $1.90, you can get a second container at 50% off. Now which is the better buy per pint, two pints on sale, or 1.5 quarts for $3.57? Explain your reasoning.

49. Solve each equation:

a. $x + 9 = 21$

b. $g - 5 = 17$

c. $22 = n \div 2$

d. $3.5 = 5f$

50. Robbie went for a bike ride. They rode 3.4 miles in 12 minutes. At this rate, how far would they go in an hour? Use the table if you wish.

Miles	**Minutes**

51. On a beautiful summer day, Violet decides to rent a kayak and paddle on the Ipswich River. To rent a kayak, she will have to pay $20 plus an additional $2 for each hour she is out on the river.
    a. Complete the table to show how much she will have to pay for different amounts of time kayaking.

Hours	1	2	6	10
Total Cost ($)				

    b. Write an expression to show how much she will have to pay for any number of hours h.

    c. If Violet ends up paying $28, how long was she kayaking?

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

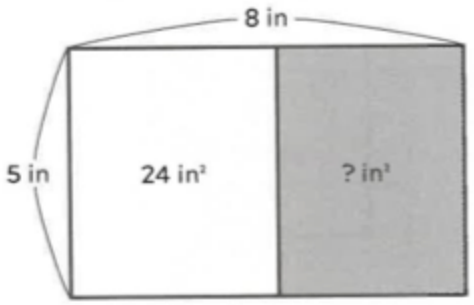
53. A soccer team is raising money for the upcoming season, and a kind supporter gives each team member a $25 gift certificate to Soccer-Is-Us. The team decides to put all the gift certificates together to spend on soccer balls. Each ball costs $15 per ball, and they are able to buy 20 balls. How many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

54. 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.

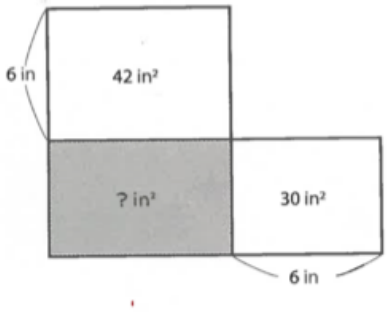
Find the shaded area

1.



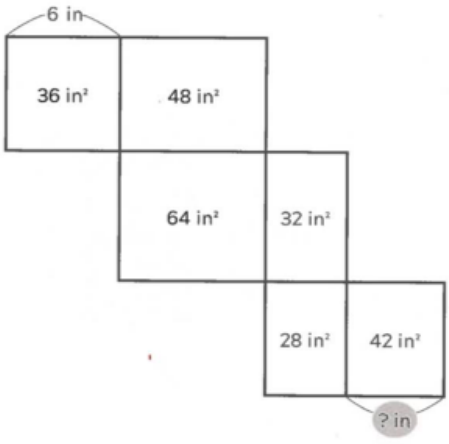
Find the shaded area

2.



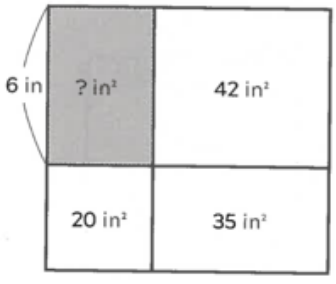
Find the missing side length

3.



Find the shaded area

4.



Optional Challenge

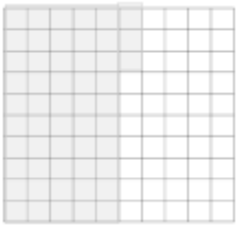
An eccentric billionaire spends her lunch hour passing out red and blue envelopes full of money. Blue envelopes contain $7 more than red ones.

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.  b. 
8. a. 9 b. 5
9. $\frac{43}{5}$
10. $2\frac{3}{4}$
11. $1\frac{3}{10}$
12. $4\frac{5}{12}$
13. a. 
    b. $\frac{1}{20}$
    c. $\frac{1}{4} \times \frac{1}{5} = \frac{1}{20}$
14. a. 
    (or any other arrangement, as long as 53 small boxes are shaded)
    b. $\frac{53}{100}$

15.
   a. 12
   b. $85\frac{1}{3}$
   c. iii
   d. iv

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

17. 1

18. a. Your estimate should be somewhere around 5 or 6. b. 5.64

19. a. $865 \div 5$ b. 173

20. $11.94

21. a. 15 cm/min b. $\frac{1}{15}$ min/cm (or $0.0\overline{6}$ if you did it the hard way)

22. a. 0.09 miles per hour b. 1.08 miles

23. $1\frac{1}{8}$ teaspoons

24. 8 lemons

25. a. $2\frac{1}{4}$ cups b. $3\frac{3}{4}$

26. It means multiply 2 by itself three times.
   a. $2 \cdot 2 \cdot 2$ b. 8

27. a. 49 b. 81 c. 15 d. 32

28. a. $n = 19$ b. $p = 7$ c. $k = \frac{14}{5}$ or $2\frac{4}{5}$ or 2.8

29. 25 lacrosse players

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

31. 0.038

32. 42

33. 140

34. 15%

35. $36

36. 1764 adults, 504 teenagers, and 882 children under 12

37. a. $<$ b. $>$

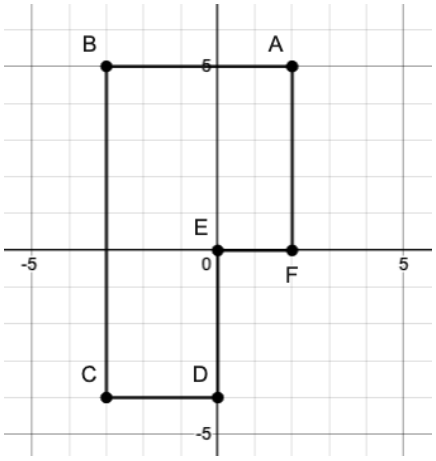
38. $-\frac{5}{6}$, -0.5, $\frac{1}{10}$, 0.9

39. a. 5 b. 3 c. 0.28 d. $\frac{2}{7}$ e. 0

40. a. $>$ b. $=$ c. $<$ d. $<$

41. a. 20 b. 7

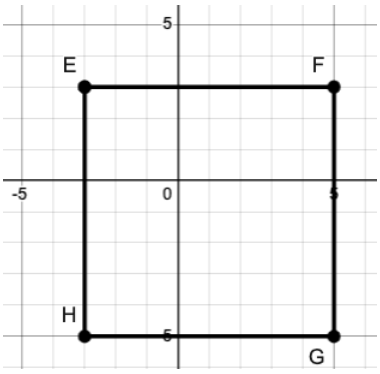
42.

a. 

b. 37 square units c. 28 units

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

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

45. a. 

b. (-3, -5) c. 64 square units

46. a. 45 square units b. 36 units

47. 36 campers

48. a. $2.38 b. The 1.5-quart container is the better buy. Since 1.5 quarts is the same as 3 pints, divide $3.57 by three. The cost per pint is only $1.19. c. The 1.5 quart container is still the better buy because it costs $1.19 per pint. If you buy two pints, one for $1.90 and the other for $0.95, that adds up to $2.85. Then divide that by 2 to get the cost per pint, which is $1.425.

49. a. $x = 12$ b. $g = 22$ c. $n = 44$ d. $f = 0.7$

50. 17 miles

51.

a.

Hours	1	2	6	10
Total Cost	22	24	32	40

b. $20 + 2h$

c. 4 hours

52. 4 dog collars

53. 12 players

54. 1. A = 16 in^2 2. A = 35 in^2 3. ? = 6 in 4. A = 30 in^2

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