Learning Prep School

2020 Summer Math Packets

Summer packets are intended to act as a review for students in order to prevent regression in previously learned concepts. Students are not expected to work on new material over the summer. Please choose the summer packet that would be in line with the class that your child took this past academic year. Rising 9th graders should complete the Functional Math packet. For students who have difficulty independently completing the packet at their level, or for students needing a review in basic skills, the "functional packet" contains problems on time, money, and choosing the correct mathematical operation based on real-life word problem scenarios.

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Learning Prep School

2020 Summer Packet

FUNCTIONAL MATH

Addition & Subtraction Word Problems

*****Look at the key words in each box to help you decide whether to add or subtract.**

Addition	Subtraction
Sum	Difference
Increased	Less Than
Total	How Much More Than?
All Together	Decreased

Solve each number expression:

Example: The **total** of 4 and 3 → 4 + 3 = 7

1. 10 **decreased** by 6
2. The **sum** of 11 and 12
3. The **difference** between 13 and 3
4. 6 **increased** by 8
5. 5 **less than** 12
6. The **total** of 10 and 10

Word Problems

7. The temperature was 60 degrees on Monday. On Tuesday, the temperature **decreased** by 8 degrees. What was the new temperature on Tuesday?

8. Amelia had $20. Lauren had $15. How much money did they have **combined?**

9. Colin had a savings account with $50. He **deducted** $20 from his account. How much money was left in his savings account now?

10. Steve had a pizza with 8 slices. He ate 2 of the slices. **How many slices were left?**

11. At 6 AM, the temperature was 60 degrees. By noon, the temperature **increased** by 15 degrees. What was the new temperature at noon?

Adding Coins

Add up the coins to determine the amount of money in each problem.

1. 

2. 

3. 

4. 

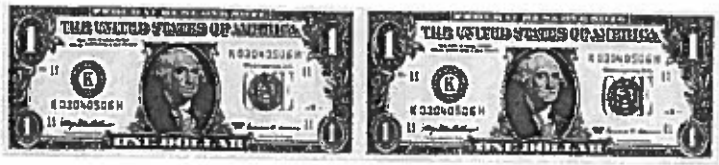
5. 

Adding Bills

6. 

7. 

8. 



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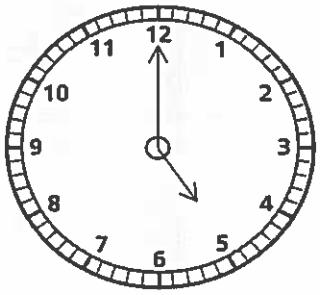
Name: _____

Date: _____

Analog Clocks & Elapsed Time

Write the time of day based on what is shown on each clock.

1. 

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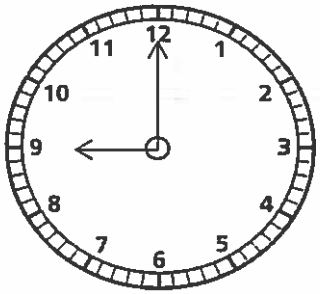
2. 

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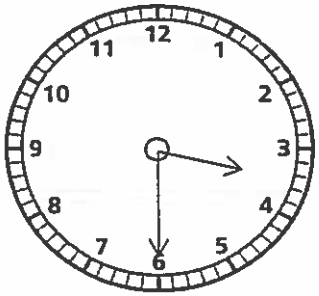
3. 

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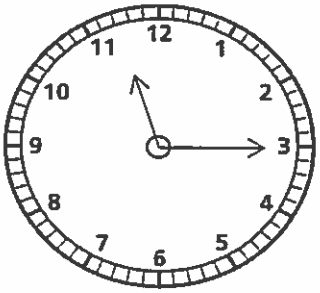
4. 

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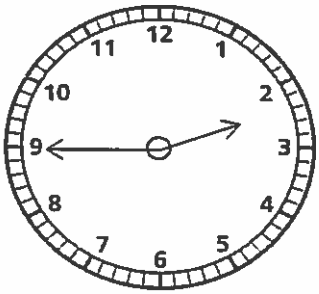
5. 

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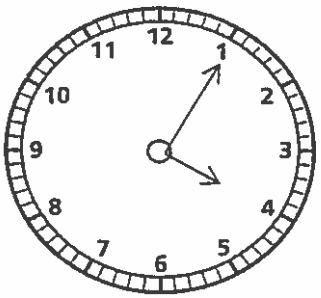
6. 

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Making the Correct Amount of Change

$0.25

$0.10

$0.05

$0.01

Use the pictures above to help you determine how many of each coin you would need in order to make the correct amount of money. Each problem has more than one possible answer!

1. $0.50

2. $0.21

3. $0.65

4. $0.35

5. $0.40

6. $0.68

7. $0.75

8. $0.95

Elapsed Time

Solve for the amount of time between the start and end times:

1. Start Time: 9:00 AM

   End Time: 11:00 AM = _____ hours

2. Start Time: 12:00 PM

   End Time: 4:00 PM = _____ hours

3. Start Time: 2:00 AM

   End Time: 3:30 AM = _____ hours and _____ minutes

4. Start Time: 9:00 AM

   End Time: 11:45 AM = _____ hours and _____ minutes

5. Start Time: 7:10 PM

   End Time: 11:20 PM = _____ hours and _____ minutes

6. Start Time: 3:10 PM

   End Time: 3:25 PM = _____ minutes

Elapsed Time

Determine how much time has gone by between the start and end times. Follow the example.

7. Start time: 1:00 AM

   End Time: 3:00 AM

   Time Elapsed: **2 hours**

8. Start time: 4:00 PM

   End Time: 7:00 PM

   Time Elapsed: _____

9. Start time: 3:00 PM

   End Time: 10:00 PM

   Time Elapsed: _____

10. Start time: 11:00 PM

    End Time: 11:30 PM

    Time Elapsed: _____

11. Start time: 10:00 AM

    End Time: 6:00 PM

    Time Elapsed: _____

Mixed Money Problems

Read carefully. Show your work.

1. Maxwell had 3 quarters, 2 dimes and 4 nickels. How much money did he have?

2. A load of laundry at the Laundromat costs $2.00. You can only use quarters. How many quarters would you need?

3. A sandwich at the deli costs $5.75. How much change would you get back if you paid with a $10 bill?

4. Grace had six $5 bills. How much money did she have?

5. Curtis had 8 nickels. Jeff had 1 quarter and 2 dimes. Who had more money? (Show how much money each person had to prove your answer)

6. Alena worked at her job for 4 hours. If she earned $12 for each hour she worked, how much money did she earn for the day?

7. If you had TWO $20 bills and wanted to buy something for $35, how much change would you get back?

Multiplication & Division Word Problems

Read each problem carefully. Decide whether to use multiplication or division to solve.

1. Steve took 21 minutes to complete reading a chapter from a book. The chapter was 7 pages long. How many minutes reading did Steve spend per page?

2. Jayden got 8 hours of sleep per night. How many hours of sleep did he get for the entire week? (1 week = 7 days)

3. Chris earned $10 per hour at a job. If he worked 30 hours in one week, how much money did he earn for the week?

4. Aimee earned $20 per day for babysitting. How many days would she have to babysit for in order to earn $100?

5. Rafael had 15 total cards. He arranged the cards in 3 different stacks. How many cards were in each stack?

6. Six days per week, Tim goes on a 3-mile walk. How many miles would Tim have walked by the end of the week?

Dimes & Nickels

Remember that:  = 10 cents!  = 5 cents!

Example: 

10 + 10 + 5 = 25 cents

1.  = _____

2.  = _____

3.  = _____

Dimes & Nickels (continued)

4.  = _____

5.  = _____

6.  = _____

7.  = _____

Learning Prep School

2020 Summer Packet

PRE-ALGEBRA

Name: _____

Date: _____

Finding a Percent of a Number (Decimal Method)

Change each percent to a decimal, then multiply by the other number in the problem. Follow the example.

1. What is 35% of 20?

   35% = 0.35

   0.35 • 20 = **7**

2. What is 60% of 90?

3. What is 92% of 200?

4. What is 4% of 25?

5. What is 11% of 400?

6. What is 125% of 40?

7. What is 10% of 70?

8. What is 50% of 40?

9. What is 4.5% of 80?

10. What is 2% of 1000?

Name: _____

Date: _____

Adding and Subtracting Fractions

*Make sure to find the common denominator first. Then create equivalent fractions with your common denominator before adding or subtracting the numerators! Use the "multiples" hint to find the Common Denominator.

1. $\frac{1}{5} = \frac{3}{15}$

$+ \frac{2}{3} = \frac{10}{15}$

$\frac{13}{15}$

5: 5, 10, **15**
3: 3, 6, 9, 12, **15**

2. $\frac{3}{5} = \frac{15}{35}$

$+ \frac{1}{7} = \frac{5}{35}$

5: 5, 10, 15, 20, 25, 30, **35**
7: 7, 14, 21, 28, **35**

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

$- \frac{1}{3}$

8: 8, 16, **24**
3: 3, 6, 9, 12, 15, 18, **24**

4. $\frac{1}{6}$

$+ \frac{1}{4}$

6: 6, **12**
4: 4, 8, **12**

5. $\frac{3}{10}$

$+ \frac{1}{6}$

10: 10, 20, **30**
6: 6. 12, 18, 24, **30**

6. $\frac{1}{2}$

$- \frac{2}{5}$

2: 2, 4, 6, 8, **10**
5: 5, **10**

Name: _____

Date: _____

Word Problems – Addition or Subtraction?

Solve each problem. Read carefully and look for key words to decide whether you should solve the problem by using *addition* or *subtraction*. You may use a calculator if you need to.

1. Steve had $20. Jeff had $10. What was the **total** amount of money they had?

2. Colin wants to save $50 for a new video game. He has already saved $35. **How much more** money does he need to save to reach his goal?

3. A classroom has 5 boys and 2 girls. How many students are there **all together**?

4. In the classroom with 5 boys and 2 girls, what is the **difference** between the amount of boys and girls in the classroom?

5. Kevin earned an 85 on a quiz. On his next quiz, his score **increased by** 3 points. What was Kevin's score on his next quiz?

Name: _____

Date: _____

Addition/Subtraction Word Problems 2

Read each problem carefully. Decide whether to use addition or subtraction to solve. Show your work. After you get your solution, re-read the problem and think about whether or not your answer makes sense.

1. Natalie visits a grocery store to buy tomatoes. The cost of tomatoes is $26. She remitted the bill and received $4 in change from the cashier. How much did she pay the cashier?

2. Lara and Mae participated in a quiz contest. They scored 23 points in all. If Lara scored 9 points, how many points did Mae score?

3. John was gifted with a pack of crayons. Rhea borrowed 13 crayons and John was left with 12 crayons. How many crayons did the pack contain originally?

4. Smith and his friends are gaming online on a popular website. An hour later, 6 friends go offline. Five of them continue playing. How many of them were gaming online initially?

5. Trevor took up a school test, the duration of which was one hour. There were two sections to be answered. If he finished the first section in 35 minutes, how much time remained for him to complete the second section?

Name: _____

Date: _____

Do I Multiply or Divide?

There aren't *always* specific key words or phrases to use when looking at multiplying or dividing. One important thing to think of is if you are getting a total amount of something, you would usually use multiplication. If you are sharing or splitting something, or if you are getting a part out of a total amount, you would usually use division.

Also, if you use the wrong operation, you should notice that your answer usually won't make sense. When you get your solution, read the problem again and see if it makes sense!

1. Curtis worked at a job in high school where he made $10 per hour. If he worked 5 hours in one day, how much money did he make for the day?

2. Jodi spent $5 on cat food for each cat. If she has five cats, how much money did she spend on cat food?

3. Steve had a total of 30 students. He wanted to split his classes up into equal groups. If Steve had 6 classes, how many students were there per class?

4. Jeff read 51 pages of a book in 3 hours. How many pages did he read per hour?

Multiply/Divide (continued)

5. Leah took 50 steps per hour on Wednesday during school. If she was at school for 7 hours, how many total steps did she take?

6. Jack copied 20 worksheets in a school week. If he worked a regular 5-day week, how many worksheets did he copy per day?

7. Cheryl spent 3 days grading quizzes. If she graded 9 quizzes per day, how many quizzes did she grade during the 3 days?

8. Jon told his students to do research on all 50 states. If it took students 5 days to complete all their research, how many states did they work on per day?

9. Chad asked his students to shoot 40 baskets each day they had gym. How many baskets would a student shoot if they had 3 days of gym?

10. Martha wanted students to read 100 pages of a book in 5 days. How many pages would her students have to read per day?

Name: _____

Date: _____

Algebraic Expressions – Evaluating

For all problems, let x = 2, y = 3 and z = 5

1. $z^2 =$

2. $y - x =$

3. $4y - x =$

4. $x + y + z =$

5. $z - y^2 =$

6. $z^3 =$

7. $3z + 2x =$

8. $5z - x =$

9. $xy =$

10. $4z - (x + y) =$

Name: _____

Date: _____

Writing Algebraic Expressions

Translate each sentence into an algebraic expression. Look for key words in bold which tell you the correct mathematical operation to use. Follow the example.

1. The **sum** of x and 3

   x + 3

2. The **difference** between y and 12

3. 5 **less than** a number z

4. The **product** of x and 10

5. The **quotient** of y and 4

6. The **total** of x and 14

7. A number z **decreased** by 21

8. A number y **increased** by 16

9. x tickets at $6 **each**

10. A number m **split into groups** of 4

Name: _____

Date: _____

One-Step Equation Solving

Solve each equation by using the inverse operation:

1. $x - 5 = 13$
2. $x - 10 = 21$
3. $3 + b = 11$
4. $c + 17 = 30$
5. $m - 15 = 15$
6. $12 + a = 23$
7. $25 = z - 6$
8. $y + 100 = 200$
9. $x + 3.5 = 18.5$
10. $w + 8 = 3$

Name: _____

Date: _____

One-Step Equation Solving: Multiplication & Division

Do the *inverse* (opposite) operation in order to solve for the variable in each problem. Follow each example:

Multiplication Equation	**Division Equation**
$5x = 10$	$\frac{y}{6} = 3$
$\frac{5x}{5} = \frac{10}{5}$ ***divide** each side by 5	$(6)\frac{y}{6} = 3(6)$ ***multiply** each side by 6
$10 \div 5 = 2$, so **x = 2**	$3(6) = 18$, so **y = 18**

---

1. $6x = 30$
2. $\frac{x}{4} = 7$
3. $\frac{a}{6} = 2$
4. $10 = 2b$
5. $10x = 90$
6. $\frac{x}{8} = 7$
7. $20y = 40$
8. $5g = 55$
9. $\frac{x}{5} = 9$
10. $x^2 = 25$

Learning Prep School

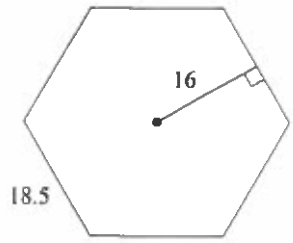
2020 Summer Packet

GEOMETRY

Geometry Summer Packet Name_____

Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.

1)



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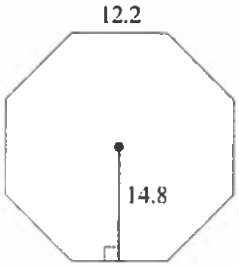

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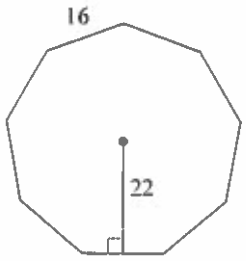

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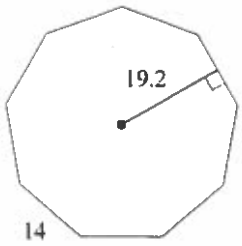

Find the missing side lengths. Leave your answers as radicals in simplest form.

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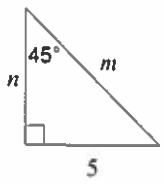

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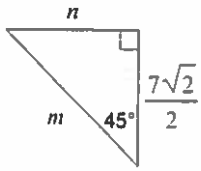

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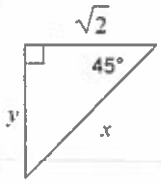

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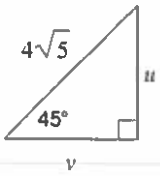

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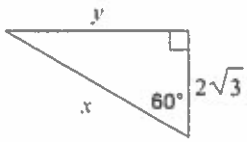

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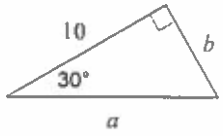

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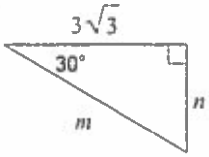

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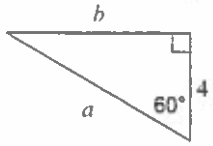
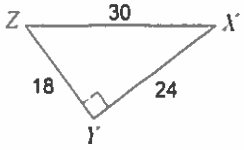
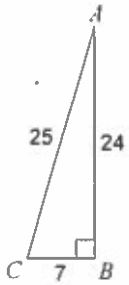


Find the value of each trigonometric ratio.

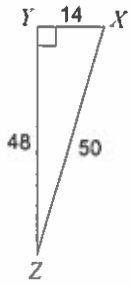
13) $\sin X$



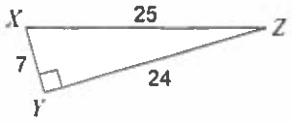
14) $\tan A$



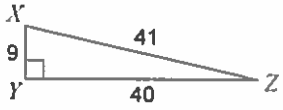
15) $\tan X$



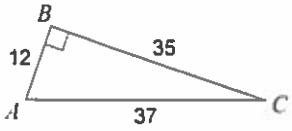
16) $\cos Z$



17) $\sin Z$



18) $\cos C$



Find the measure of the indicated angle to the nearest degree.

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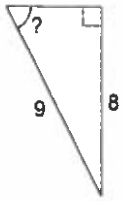

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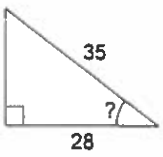

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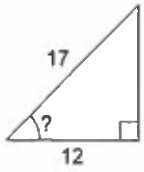

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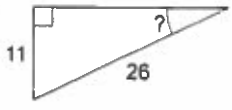
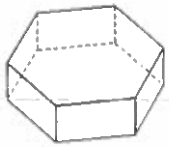


Name each figure.

23)

24)



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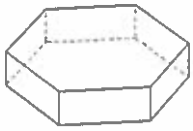
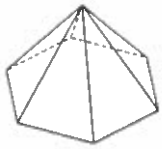
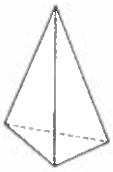


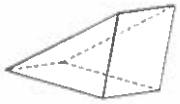
26)



27)

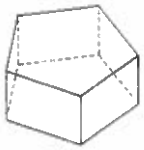


28)

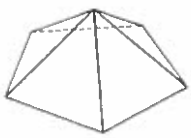


29)

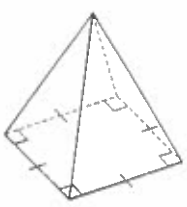
30)



31)

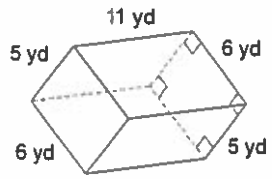


32)

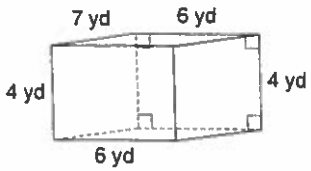


Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

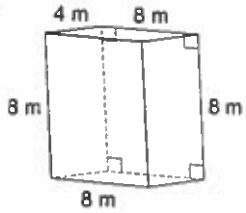
33)



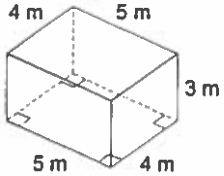
34)



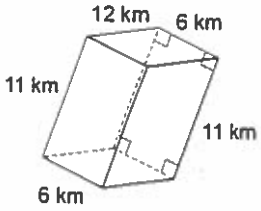
35)



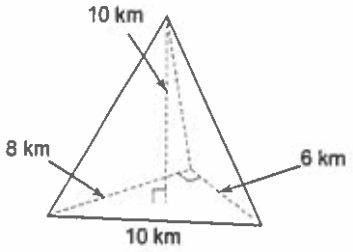
36)



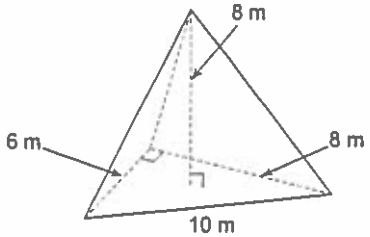
37)



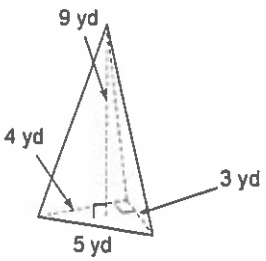
38)



39)

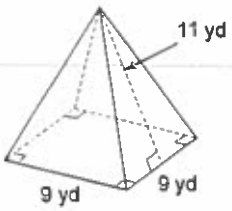


40)

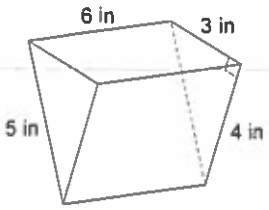


Find the surface area of each figure. Round your answers to the nearest hundredth, if necessary.

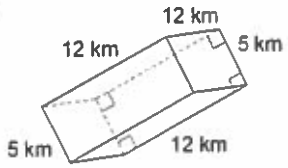
41)



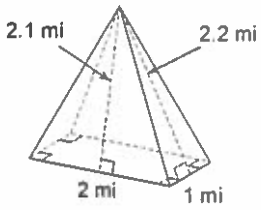
42)



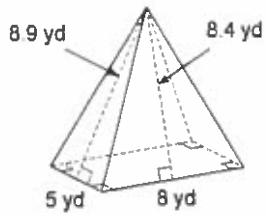
43)



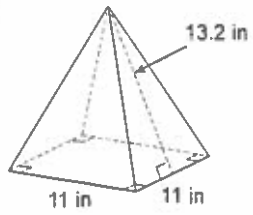
44)



45)



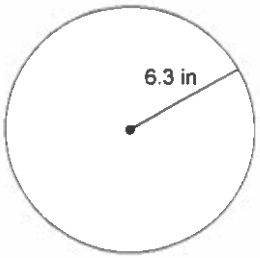
46)



Find the area of each. Use your calculator's value of π. Round your answer to the nearest tenth.

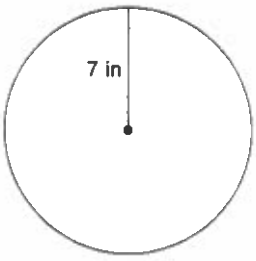
47)

48)

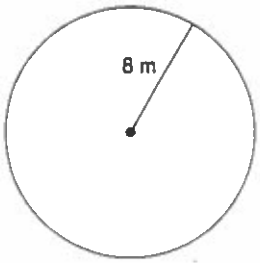


Find the circumference of each circle. Use your calculator's value of π. Round your answer to the nearest tenth.

49)

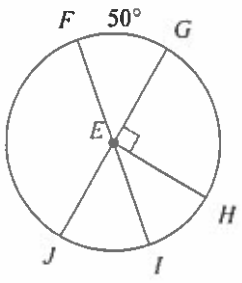


50)

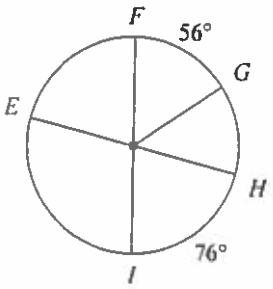


Find the measure of the arc or central angle indicated. Assume that lines which appear to be diameters are actual diameters.

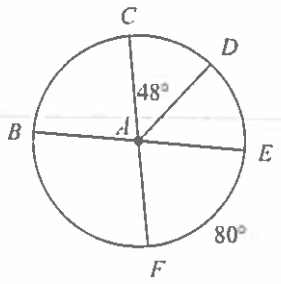
51) $m\angle FEH$



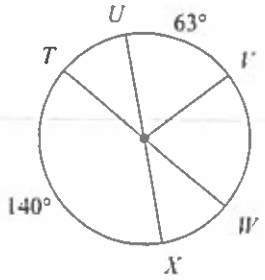
52) $m\overset{\frown}{IFH}$



53) $m\angle BAC$

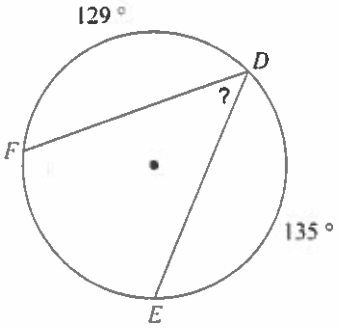


54) $m\widehat{UW}$

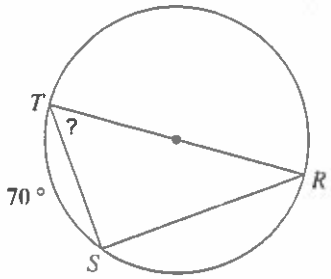


Find the measure of the arc or angle indicated.

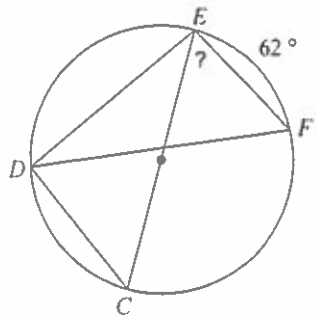
55)



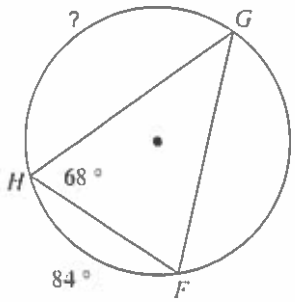
56)



57)

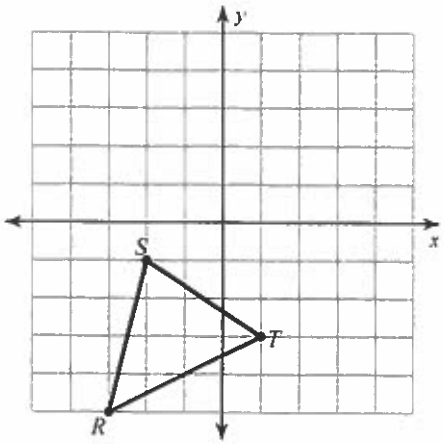


58)

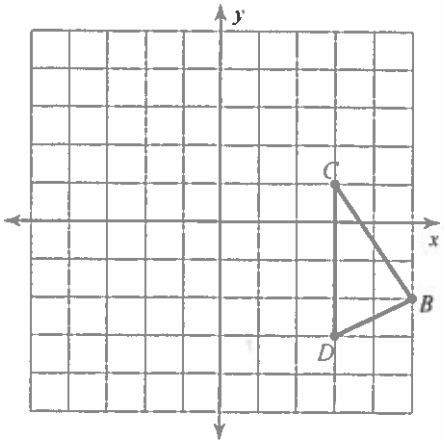


Graph the image of the figure using the transformation given.

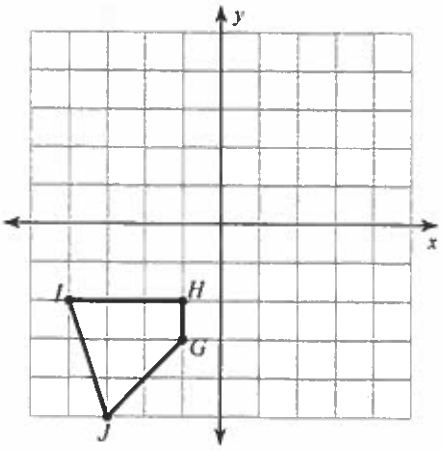
59) translation: $(x, y) \rightarrow (x + 1, y + 4)$



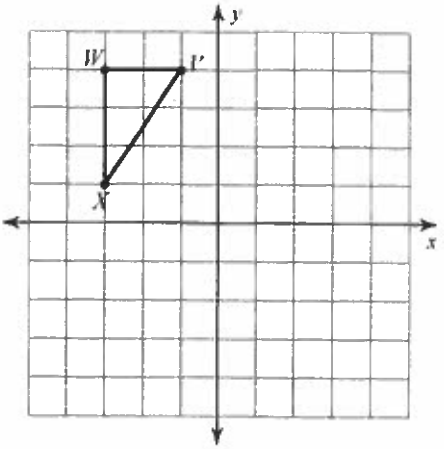
60) translation: $(x, y) \rightarrow (x - 2, y + 1)$



61) reflection across $x = -1$

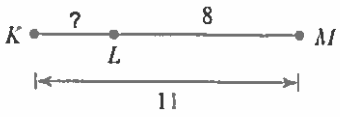


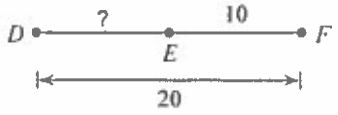
62) reflection across $y = 3$



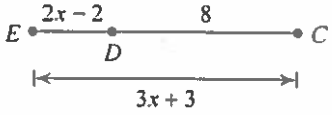
Name _____

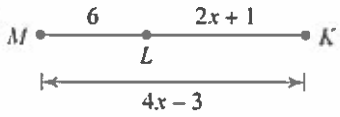
Find the length indicated.

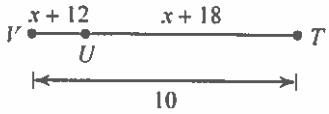
1) 

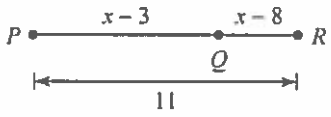
2) 

Solve for x.

3) 

4) 

5) 

6) 

Classify each angle as acute, obtuse, right, or straight.

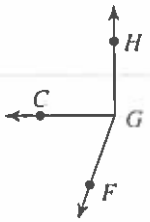
7) 

8)

9) 

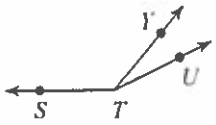
10) 

11) Find $m\angle FGH$ if $m\angle FGC = 70°$ and $m\angle CGH = 90°$.

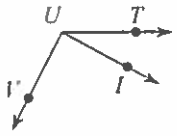


12) $m\angle RSJ = 110°$ and $m\angle RST = 175°$. Find $m\angle JST$.

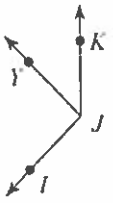
13) Find x if $m\angle STY = 130°$, $m\angle YTU = 7x - 4$, and $m\angle STU = 38x + 2$.



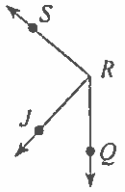
14) Find x if $m\angle TUI = x + 17$, $m\angle TUV = 10x + 8$, and $m\angle IUV = 90°$.



15) Find x if $m\angle YJK = x + 52$, $m\angle IJY = x + 100$, and $m\angle IJK = 136°$.

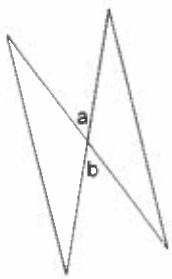


16) Find x if $m\angle QRJ = 43x + 1$, $m\angle JRS = 86°$, and $m\angle QRS = 129x + 1$.

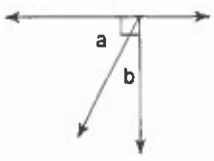


Name the relationship: complementary, supplementary, or vertical.

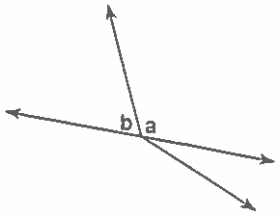
17)



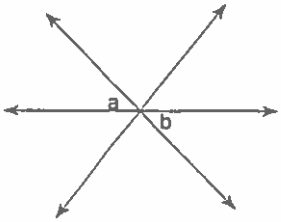
18)



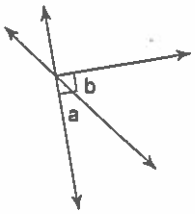
19)



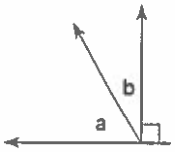
20)



21)

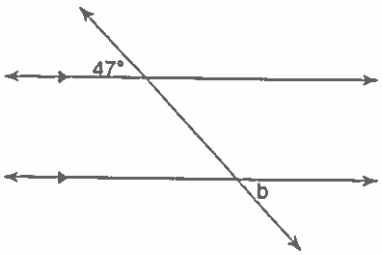


22)

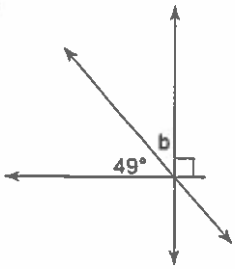


Find the measure of angle b.

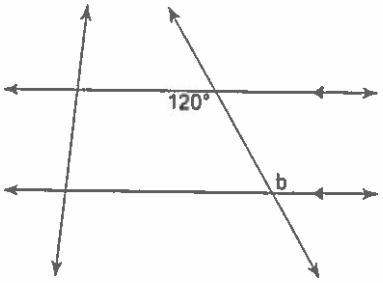
23)



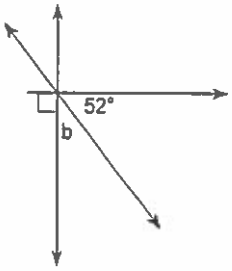
24)



25)

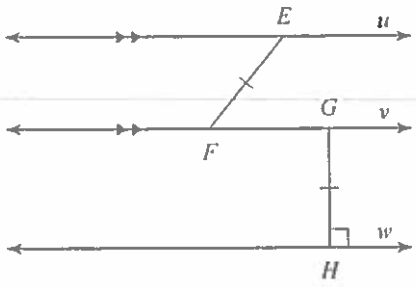


26)



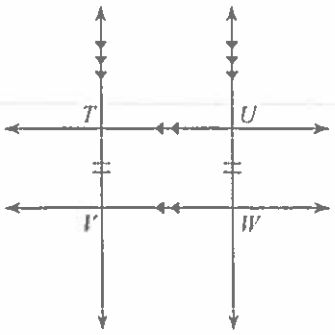
Write if the statement given is indicated by the marks on the diagram.

27)



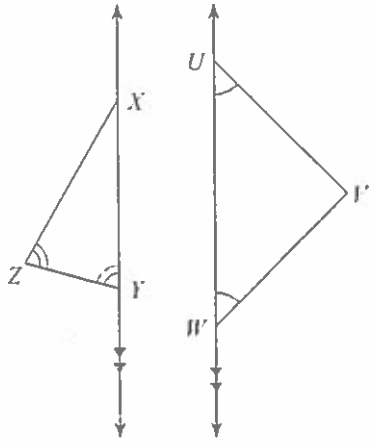
$\angle GHF \cong \angle GFH$

28)



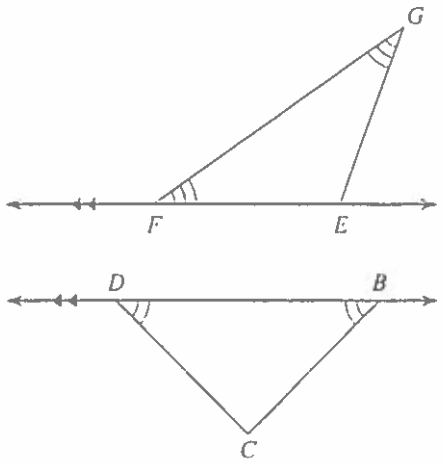
$\overleftrightarrow{TS} \parallel \overleftrightarrow{WU}$

29)



$\angle XYZ \cong \angle XZY$

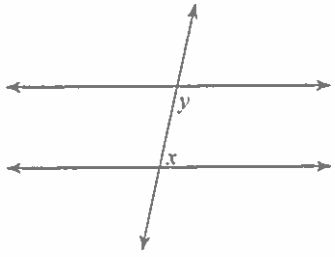
30)



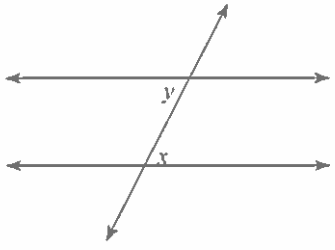
$\angle EFG \cong \angle EGF$

Identify each pair of angles as corresponding, alternate interior, alternate exterior, or same-side interior.

31)



32)



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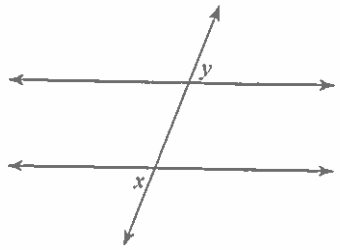

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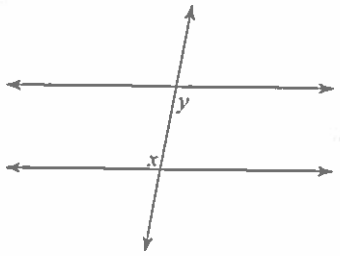

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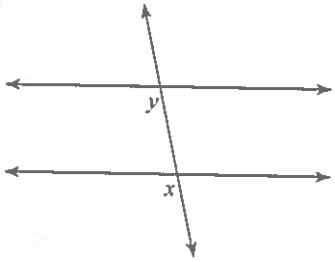
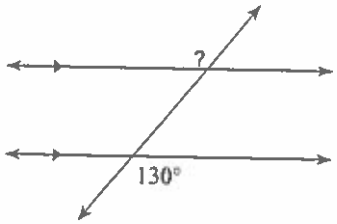


Find the measure of each angle indicated.

36)



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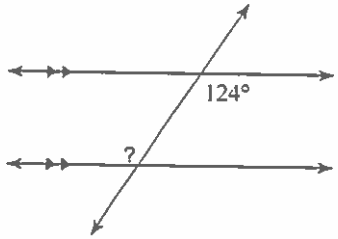

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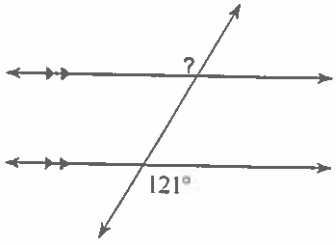

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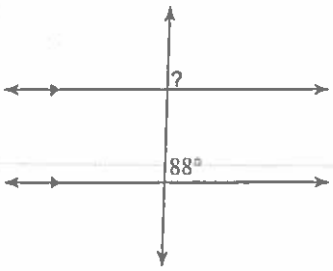
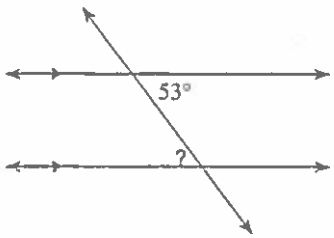
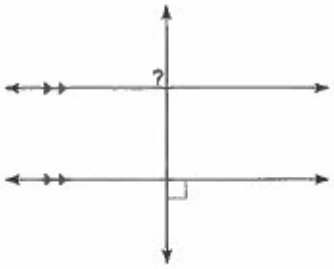


40)



41)



Find the midpoint of the line segment with the given endpoints.

42) $(-8, -2)$, $(-3, -2)$

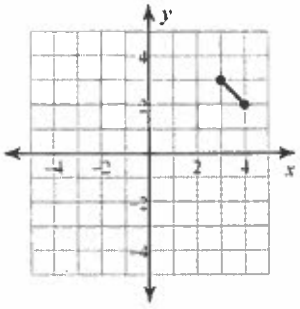
43) $(6, -3)$, $(-9, 4)$

44) $(-1, 2)$, $(-6, -2)$

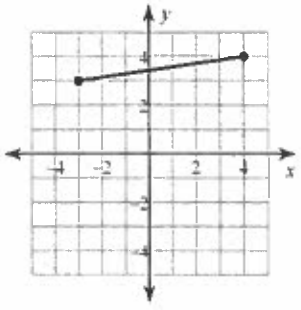
45) $(3, -10)$, $(-2, 4)$

Find the distance between each pair of points.

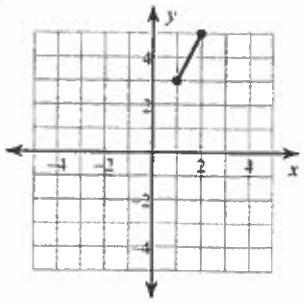
46)



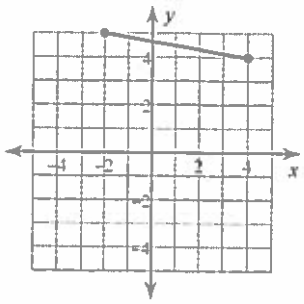
47)



48)

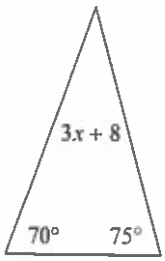


49)

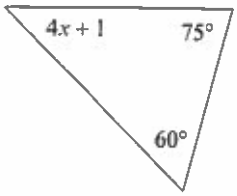


Solve for x.

50)

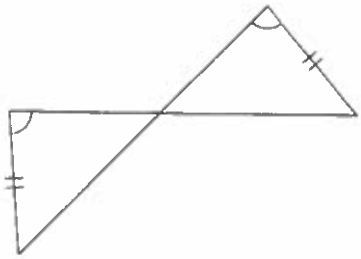


51)

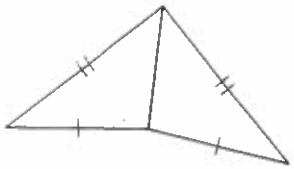


Determine if the two triangles are congruent. If they are, state how you know.

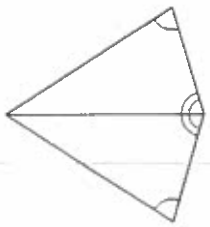
52)



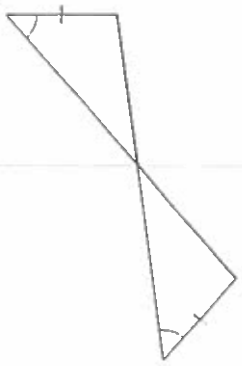
53)



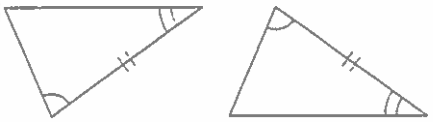
54)



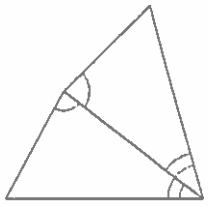
55)



56)

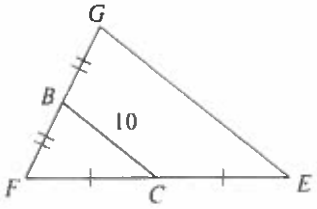


57)

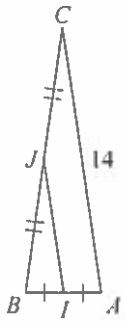


Find the missing length indicated.

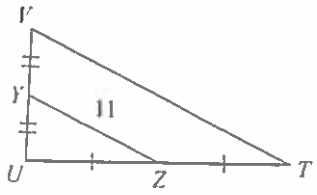
58) Find *EG*



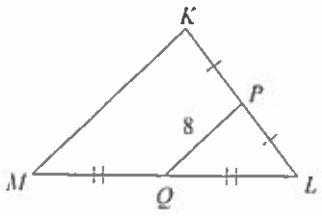
59) Find *IJ*



60) Find *TV*

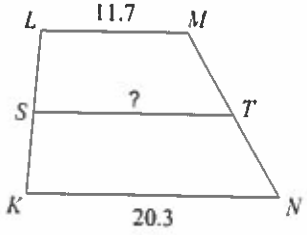


61) Find *KM*

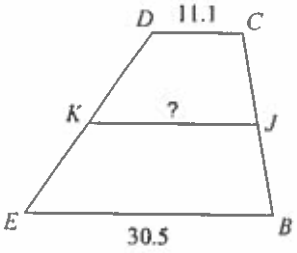


Find the length of the midsegment of each trapezoid.

62)

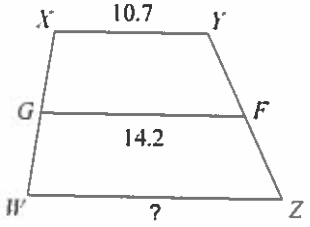


63)

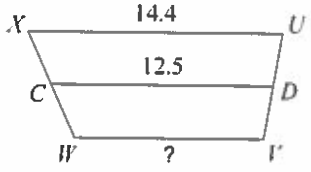


Find the length of the base indicated for each trapezoid.

64)



65)



Learning Prep School

2020 Summer Packet

ALGEBRA 1

Algebra 1

Name_____

Summer Packet 2020

Date_____ Period____

Evaluate each expression.

1) $6 \cdot 6 - 3$

2) $6 \cdot 3 + 6$

3) $\frac{4 \cdot 2}{4} + 5$

4) $1 + 3 - 2 + 1$

5) $2 \cdot 4(5 - 4 + 3)$

6) $6 \cdot 6 + \frac{10}{6 - 1}$

7) $2(6 \cdot 5 - 3 \cdot 2) - 1$

8) $6 - \frac{1 + 3}{5 - 3} - 2$

Write each as an algebraic expression.

9) the difference of 23 and 18

10) z cubed

11) the difference of x and 4

12) 45 divided by n

13) 9 more than n

14) half of 20

15) 22 divided by 2

16) the sum of b and 11

Combine like terms. If they can't be combine, indicate so.

17) $2x + 8x$

18) $6 + 5r + r$

19) $-8x + 7x$

20) $1 + 8b - 3$

21) $-8b - b$

22) $-n + 10n$

Simplify each expression using the distributive property.

23) $-9(1 + 7n)$

24) $7(x + 4)$

25) $3(x+7)$

26) $-(4v+7)$

27) $7(7p+6)$

28) $-4(3k+6)$

Solve each equation.

29) $7=\frac{n}{3}$

30) $b-8=-14$

31) $-72=8x$

32) $19=13+n$

33) $-16+x=-6$

34) $3+v=-1$

35) $18-v=20$

36) $4+x=19$

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

38) $-4(r + 9) = -76$

39) $-28 = 2 - 2v$

40) $-2n + 7 = 37$

41) $-4 + 9x = 50$

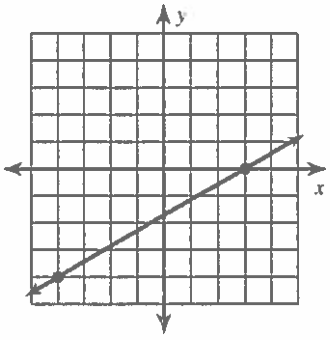
42) $-7 + \frac{a}{9} = -6$

43) $43 = 8m + 3$

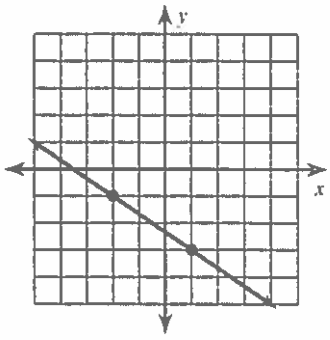
44) $6(r - 2) = 78$

Find the slope of each line.

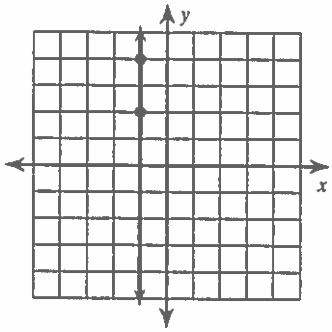
45)



46)



47)



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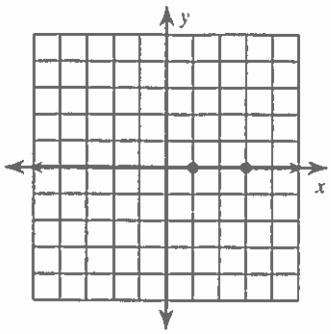

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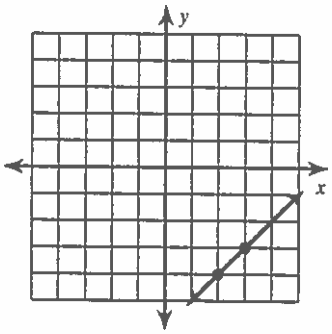

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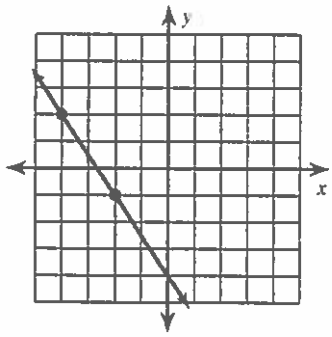

Find the slope of the line through each pair of points.

51) $(3, 6), (-6, 12)$

52) $(15, 5), (3, 5)$

53) $(-9, 18), (-19, -9)$

54) $(19, -3), (12, 15)$