

Attachment F

Strategy #1: Emphasize and Practice Language

Example 1: (Reinforce the language of instruction)
(Comparisons between quantities)

Have students generate as many comparative sentences as they can regarding the following:

Carl is 150 cm tall. John is 200 centimeters tall.

Example 2: (Make connections between language of mathematics, sign language and the language of your academic setting)

To introduce the word “Percent”, list ways in which “per” and “cent” are used in a variety of situations, along with corresponding signs.

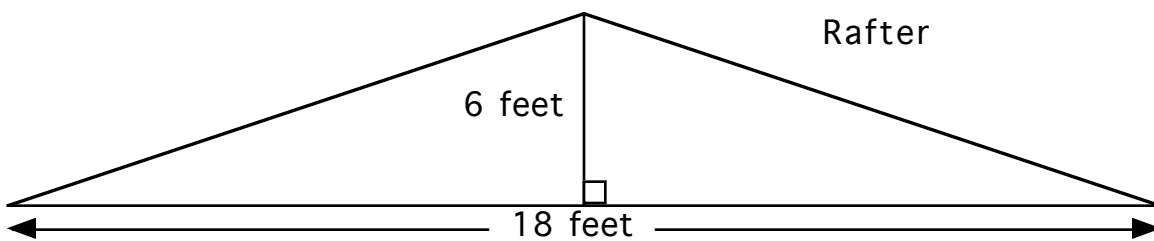
Per
kilometers per hour
pesos per week
cost per kilogram

Cent
century
centimeter

Example 3: (Discuss vocabulary with multiple meanings, everyday vocabulary, non-technical vocabulary)

- * Multiple, multiply, multiplier
- * Vertex, vertices
- * Interest, common
- * An interesting vocabulary difficulty:

Determine the length of the rafter below:



Example 4: (Key words: Be careful!)

Vince's mass is 70 kg more than Joan's. Vince's mass is 120 kg.
What is Joan's mass?

Strategy #2: Encourage Sketching

Example 5: (Visuals as part of a student's resources)
(Sketches give students a frame of reference and illustrate their thinking)

Principal, interest, amount

Use of the Pythagorean Theorem

Example 6: (As instructors model sketching, students see the essence of a problem)

It is 30 km from John's house to school. If he has walked $\frac{3}{5}$ of the way to school, how much farther does he have to go?

Example 7: (Instructor knowledge of visuals in previous courses can be used to make connections to new material)

Paper costs last year were \$800. The cost of paper is increasing by 8% this year. What will the department have to pay?

Attachment G: Sample Course Policies

EXPLORATIONS IN COLLEGE ALGEBRA (0884 260 01)

Mrs. Joan Carr MTWR 4:00-4:50 LBJ 3643

Office: LBJ 2254

E-mail: jacntm@rit.edu

Text: Intermediate Algebra, Discovery and Visualization (third edition by Hubbard and Robinson

Calculator: TI-83 or TI-84 Plus Graphing Calculator

Attendance:

There is no formal attendance policy for this course, but regular attendance is important for success. I always hand out class-notes that we use as a guide in the class-discussion. At the end of class you will have a record of what was discussed.

Homework:

I expect that you will need to do about 1.5 to 2 hours of homework for each hour in class. The **reading** is very important, and you should carefully read each section before you attempt any problems. I will collect your homework problems on **Mondays** at 4:00 and I will grade them. I will usually choose about 5 problems to grade carefully, but will also check to see if your assignments are complete. **Late homework will not be accepted.**

Working with Other Students:

I encourage you to form study groups and work everyday with each other. Explaining work to each other will help you learn this material better and faster, and help you use the vocabulary and understand the concepts being developed in class.

Extra Help:

The NLC is a great place to go if you need help on homework. My schedule of office hours is attached, and I will be happy to set up extra hours for tutoring you in my office at mutually agreeable times.

Grading:

Group problem Solving:	10%
Homework Assignments:	15%
Labs:	15%
One-hour Tests (3):	45%
Final Exam:	15%

The **FINAL EXAM** will be on Monday, November XXXX. You should not make any plans to leave for break before all your final exams are complete.

Good Luck! I hope this course will be an interesting, worthwhile and fun experience.

Attachment H

Course Codes on NTID Math Placement Test

Key: I: Intro to College Math

P: Prep for Algebra

M: Concepts of Measurement

F: Foundations of Algebra

G: Elements of Geometry / Fundamental Geometry

L: Applications of Algebra / Integrated Algebra

Subscores:

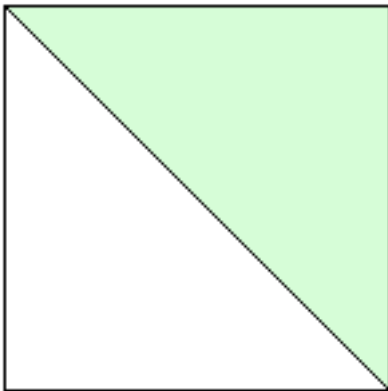
<u>Question #</u>	<u>Answer</u>	<u>Subscore</u>
1	B	I,P
6	C	I,P,M
25	B	P,F
19	A	P,F
24	E	P,F
31	B	F,L
39	C	G
32	A	F,L
45	D	L

INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1

Names: _____

- Goals:
- practice dividing geometric shapes into equal parts
 - practice writing fractions

< EXAMPLE 1 >

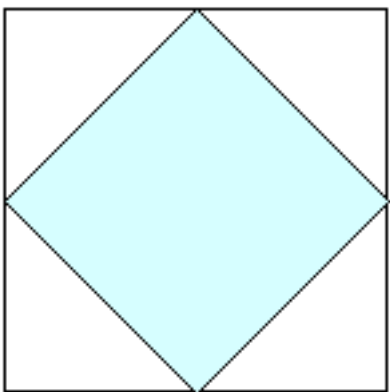


How many equal parts do you see? _____

What fraction is shaded? _____

What fraction is not shaded? _____

< EXAMPLE 2 >



Divide this figure into equal parts.

How many equal parts do you have? _____

What fraction is shaded? _____

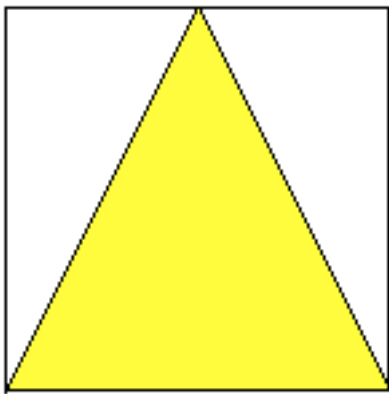
What fraction is not shaded? _____

INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1

For each of the figures below:

- use a straightedge to draw lines to divide the figure into equal parts
- write the fraction that is shaded
- write the fraction that is not shaded

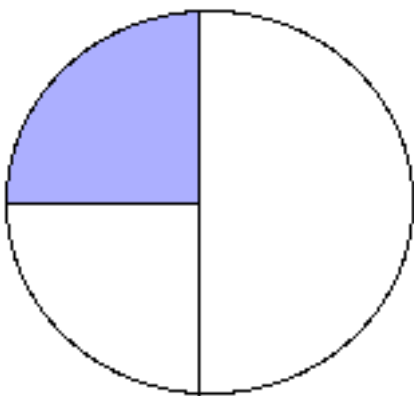
1.



Fraction shaded _____

Fraction not shaded _____

2.

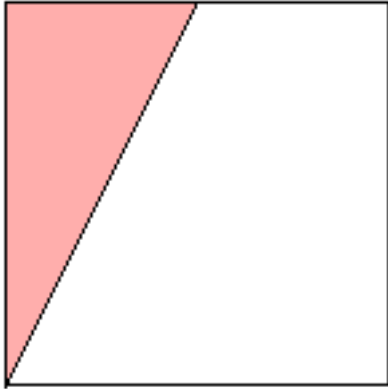


Fraction shaded _____

Fraction not shaded _____

INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1

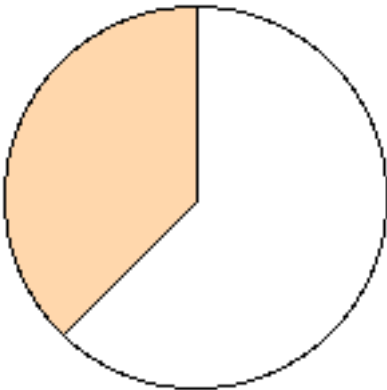
3.



Fraction shaded _____

Fraction not shaded _____

4.

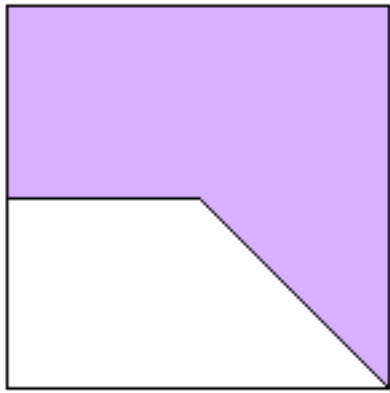


Fraction shaded _____

Fraction not shaded _____

5.

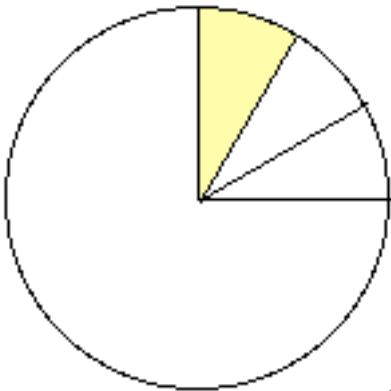
INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1



Fraction shaded _____

Fraction not shaded _____

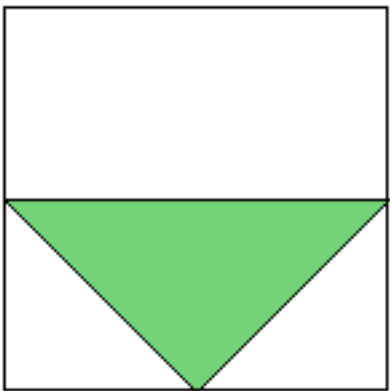
6.



Fraction shaded _____

Fraction not shaded _____

7.

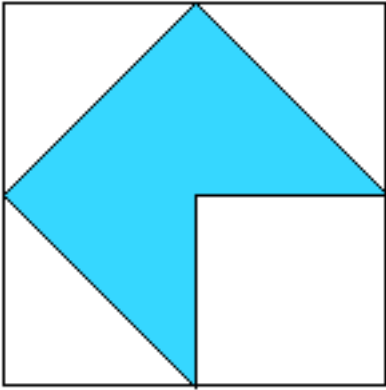


Fraction shaded _____

Fraction not shaded _____

INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1

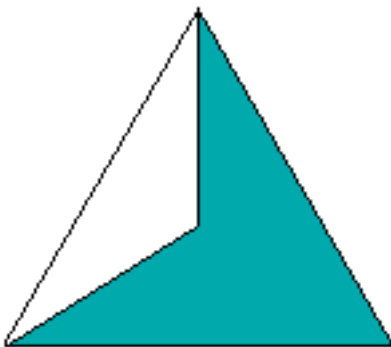
8.



Fraction shaded _____

Fraction not shaded _____

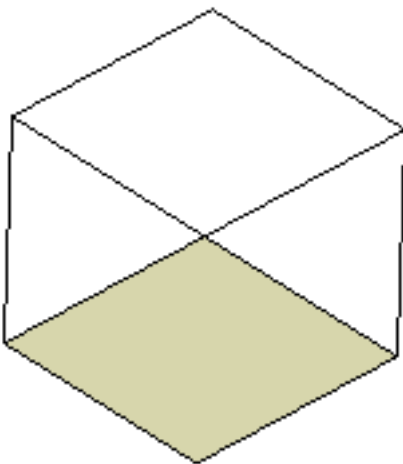
9.



Fraction shaded _____

Fraction not shaded _____

10.

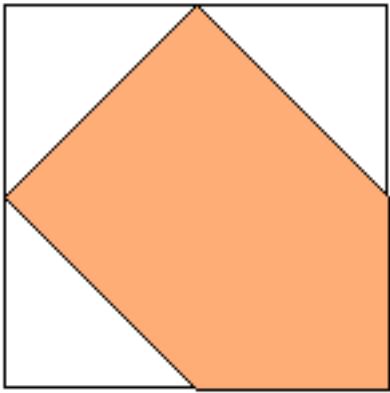


Fraction shaded _____

Fraction not shaded _____

11.

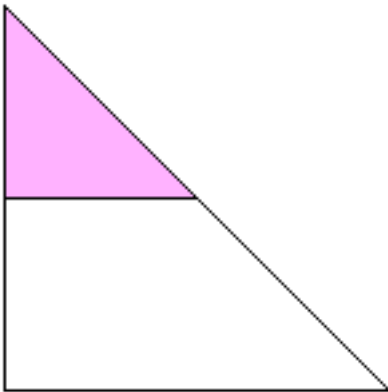
INTRODUCTION TO COLLEGE MATH
LAB ACTIVITY #1



Fraction shaded _____

Fraction not shaded _____

12.



Fraction shaded _____

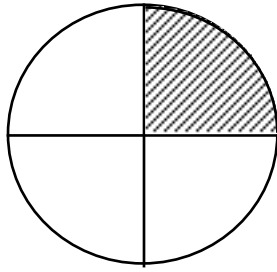
Fraction not shaded _____

NTID MATH PLACEMENT TEST

1. You will need an **answer sheet** and **scratch paper**.
If you don't have these, please ask for them now.
2. You may use a **calculator** to help you work these problems.
3. Please **DON'T WRITE ON THE TEST BOOKLET!**
Use the scratch paper to work out your answers
and mark your answers on the answer sheet.
4. If your answer is different from all the choices listed,
mark choice **F** (none of these).
5. Don't hurry! Do the best you can on each item.
6. When you are finished, hand in the test booklet and
answer sheet. Please double-check that your name
is on the answer sheet.

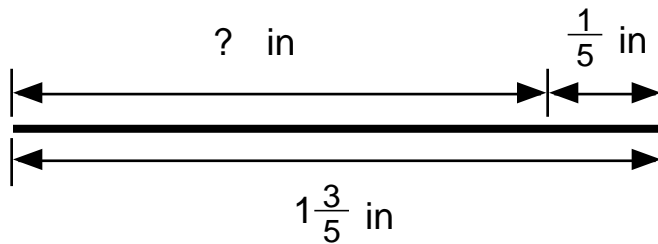
Form B

1. What **percent** of this diagram is shaded?



- A) 50% B) 25% C) 75% D) 37.5% E) $\frac{1}{4}$ %
F) none of these

2. What is the missing length?



- A) $1 \frac{4}{5}$ B) $\frac{2}{5}$ C) $\frac{5}{7}$ D) 3 E) $1 \frac{2}{5}$
F) none of these

3. A student has \$300. She spends 78% of her money on books. What **percent** of the money is left?

- A) 78% B) 122% C) 234% D) 22% E) 222%
F) none of these

4. The value of $\frac{3}{8}$ is:

- A) greater than 1 B) equal to 1 C) less than 1
D) less than 0 E) greater than 2 F) none of these

5. **Twenty percent** of all NTID students were sick with the flu last year. What fractional part of the students had the flu?

- A) $\frac{1}{20}$ B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) $\frac{1}{5}$ E) $\frac{4}{5}$
F) none of these

6. Point P represents the number:

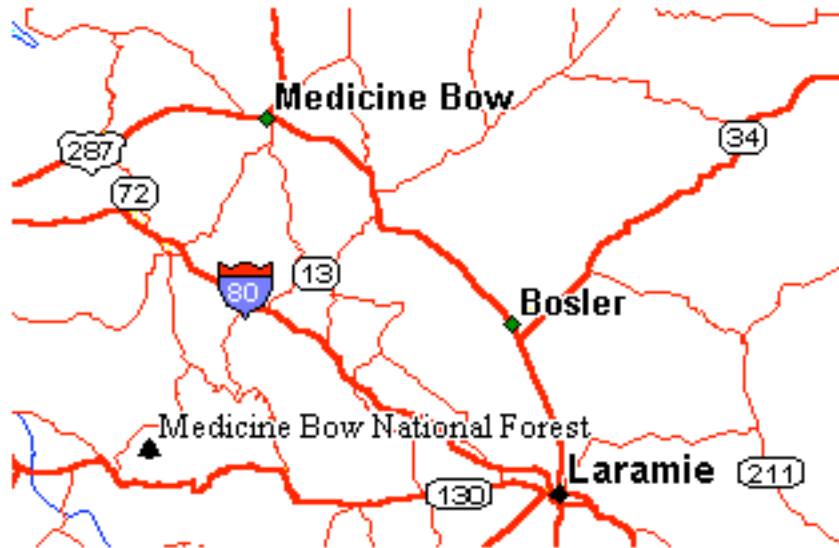


- A) $1\frac{3}{4}$ B) $\frac{1}{2}$ C) $1\frac{3}{5}$ D) $1\frac{4}{6}$ E) $\frac{3}{5}$
F) none of these

7. On a map, the distance from Bosler to Laramie is $1\frac{1}{4}$ inches.

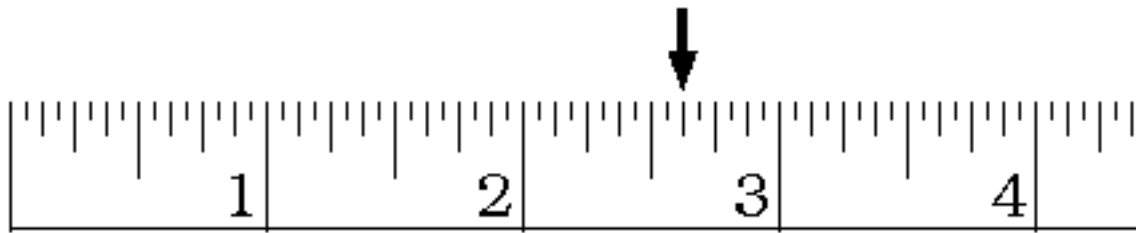
The scale on the map is $\frac{1}{2}$ inch : 12 miles

What is the distance from Bosler to Laramie?



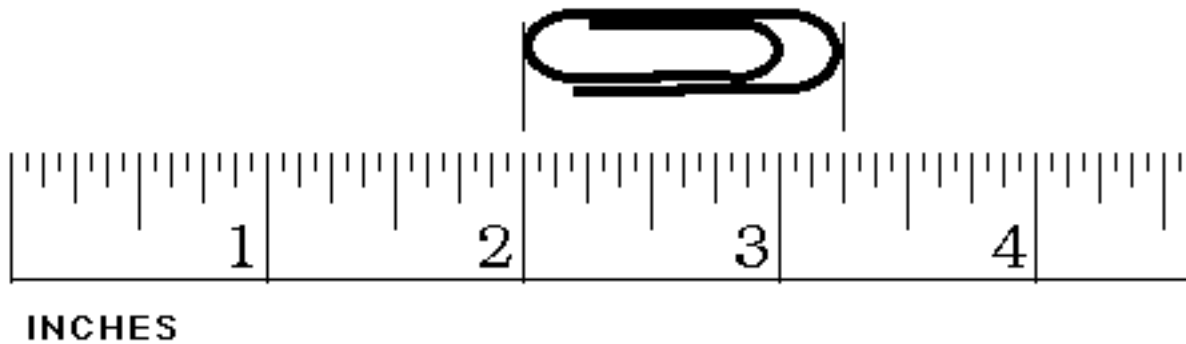
- A) 15 miles B) 60 miles C) 45 miles
D) 7.5 miles E) 30 miles F) none of these
8. It is 120 miles from Rochester to Utica. John drove $\frac{3}{4}$ of the way.
How many more miles does he have to drive?
- A) 90 miles B) 240 miles C) 180 miles
D) 30 miles E) 120 miles F) none of these

9. What reading is indicated by the arrow on the ruler below?



- A) $2 \frac{5}{8}$ B) $2 \frac{1}{2}$ C) $\frac{5}{8}$ D) $\frac{3}{4}$ E) $2 \frac{2}{3}$
- F) none of these

10. What is the length of this paper clip?



- A) $3 \frac{1}{4}$ in B) $2 \frac{1}{4}$ in C) $1 \frac{1}{4}$ in
- D) $1 \frac{1}{8}$ in E) $1 \frac{3}{8}$ in F) none of these

11. The number $1\frac{2}{5}$ is equivalent to the following fraction:

- A) $\frac{2}{15}$ B) $\frac{7}{5}$ C) $\frac{5}{7}$ D) $\frac{12}{15}$ E) $\frac{12}{5}$

F) none of these

12. Express the ratio $1 : 2\frac{1}{4}$ in simplest form,

- A) 9 : 4 B) 4 : 9 C) 1 : 9 D) 4 : 2 E) 1 : 4

F) none of these

13. A photo is reduced 50%. **The percent of reduction is the ratio of the original size to the reduced size.**
Express 50% reduction as a ratio in simplest form.

- A) 1 : 2 B) 2 : 1 C) 1 : 50 D) 3 : 2 E) 50 : 1

F) none of these

14. A line is 10 inches long. What is 25% of its length?

- A) $3\frac{1}{2}$ in B) $1\frac{1}{4}$ in C) $2\frac{1}{2}$ in

- D) $5\frac{1}{2}$ in E) $\frac{1}{4}$ in F) none of these

15. In printing we use 12 points = 1 pica.
Then 10 picas is equivalent to how many points?
- A) 1.2 points B) 220 points C) 120 points
D) 124 points E) 0.83 points F) none of these
16. Given that 1 inch equals 72 points, express 42 points in inches.
- A) $\frac{12}{7}$ in B) $\frac{1}{2}$ in C) $\frac{3}{4}$ in
D) $\frac{7}{12}$ in E) $1\frac{3}{4}$ in F) none of these
17. A photographer wants to center a photo on a sheet of paper.
The width of the photo is $3\frac{3}{4}$ inches and the width of the paper
is $8\frac{1}{2}$ inches. How many inches are left on each side?
- A) $4\frac{3}{4}$ in B) $2\frac{3}{8}$ in C) $1\frac{7}{12}$ in
D) $4\frac{1}{4}$ in E) $2\frac{5}{6}$ in F) none of these
18. Each dimension of a 3 x 4 inch photo is enlarged to
175% of the original. What are the new dimensions?
- A) $2\frac{1}{4}$ x 3 in B) 4 x 3 in C) $4\frac{1}{2}$ x 2 in
D) $5\frac{1}{4}$ x 7 in E) 6 x 8 in F) none of these

19. For the equation $2x - y = 15$, the following pair of values (x,y) is a solution:
- A) (9,3) B) (9,-3) C) (0,15) D) (10,-5) E) (8,0)
- F) none of these
20. The expression $8 + 2 \cdot 5 - 12 \div 4$ is equal to:
- A) 1.5 B) 9.5 C) 15 D) -17.5 E) 47
- F) none of these
21. Evaluate the expression $3mr - 2m$ if $m = 4$ and $r = 2$. The result is:
- A) 3 B) -8 C) 8 D) 16 E) 20
- F) none of these
22. The solution of the equation $2w + 3 = 17$ is:
- A) -7 B) -10 C) 10 D) 7 E) 14
- F) none of these
23. Bill has n apples. Mary has 2 apples less than Bill. Which of the following represents the number of apples Mary has?
- A) $n - 2$ B) $2 - n$ C) $\frac{n}{2}$ D) $2n$ E) n^2
- F) none of these

24. The solution of the equation $5(x - 7) = 2x + 1$ is:

- A) 2 B) $\frac{8}{3}$ C) $\frac{36}{7}$ D) -12 E) 12
F) none of these

25. Which of the following numbers is the largest:

-5, 1, -3.2, $\frac{1}{30}$, 0.625

- A) -5 B) 1 C) -3.2 D) $\frac{1}{30}$ E) 0.625
F) none of these

26. The solution of the equation $3a - 4 + 2a = -6$ is:

- A) $-\frac{2}{5}$ B) -2 C) 2 D) -10 E) 10
F) none of these

27. Evaluate the following absolute value expression: $|-7 + 2| =$

- A) -5 B) 5 C) 9 D) -9 E) -14
F) none of these

28. Combine: $3 + (-2) - (-5) =$

- A) 10 B) -4 C) 5 D) 6 E) -6
F) none of these

29. Solve the following equation for the variable c : $2c - k = 5$
 $c = ?$

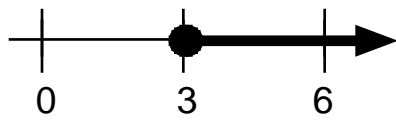
- A) $5 + k$ B) $5 - k$ C) $\frac{5K}{2}$ D) $\frac{5+K}{2}$ E) $3k$
F) none of these

30. The inequality $-2x + 4 \geq 8$ is equivalent to which of the following inequalities:

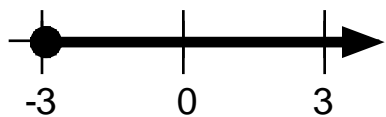
- A) $x \geq 2$ B) $x \geq -2$ C) $x \leq -2$
D) $x \leq 2$ E) $x \geq 6$ F) none of these

31. The graph of $x \leq 3$ on the number line is which of the following:

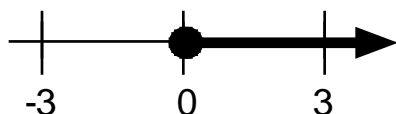
A)



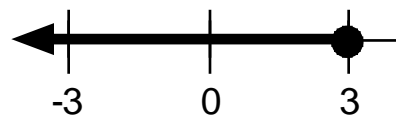
C)



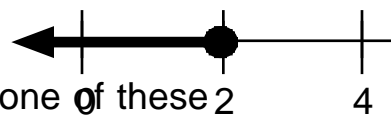
E)



B)



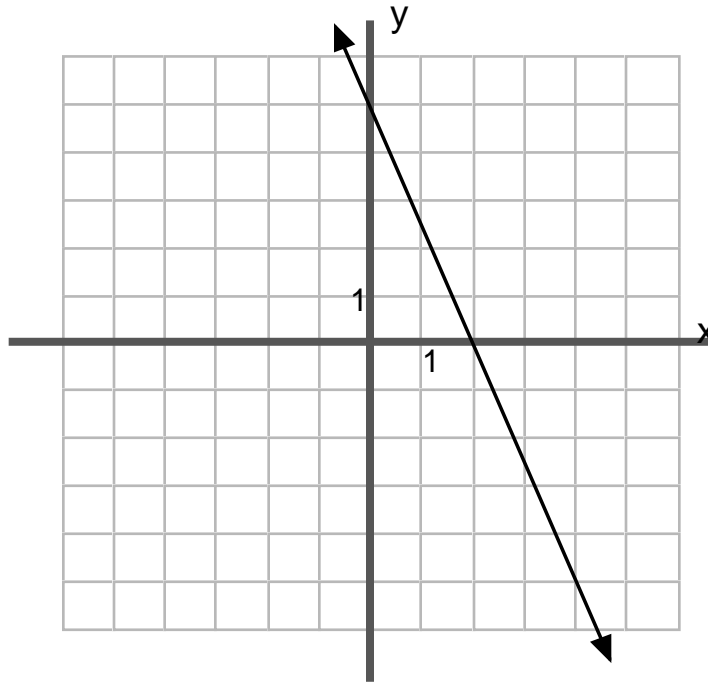
D)



F)

none of these

32. The equation $5x + 2y = 10$ is graphed below:



The slope of this line is

- A) $-\frac{5}{2}$ B) $\frac{5}{2}$ C) $\frac{2}{5}$ D) $-\frac{2}{5}$ E) 5

F) none of these

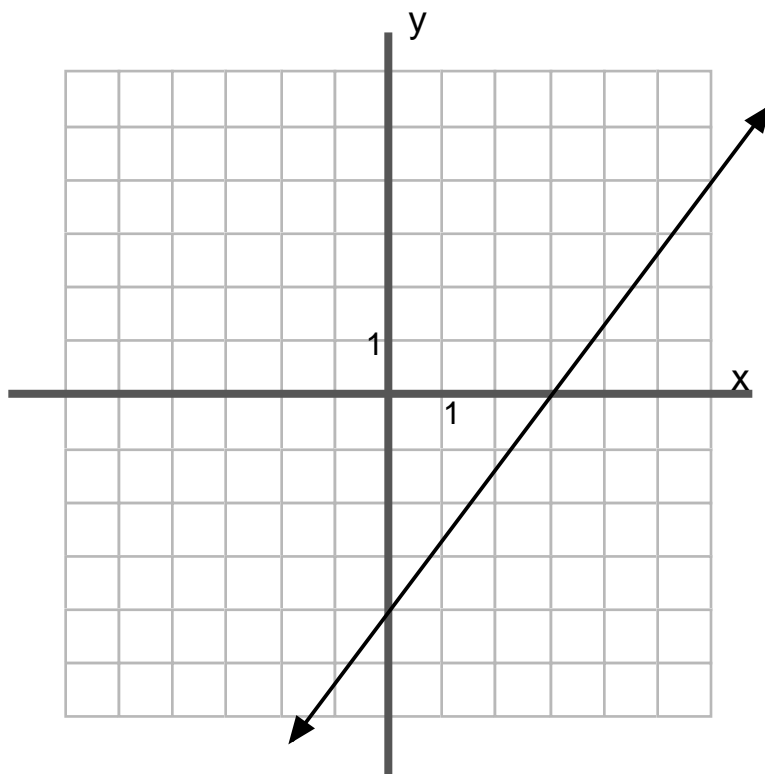
33. What is the slope of the line that passes through the points (24,6) and (10,13)?

Hint: the slope formula is $m = \frac{y_2 - y_1}{x_2 - x_1}$

- A) -2 B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) $\frac{34}{19}$ E) 2

F) none of these

34. The equation $4x - 3y = 12$ is graphed below:



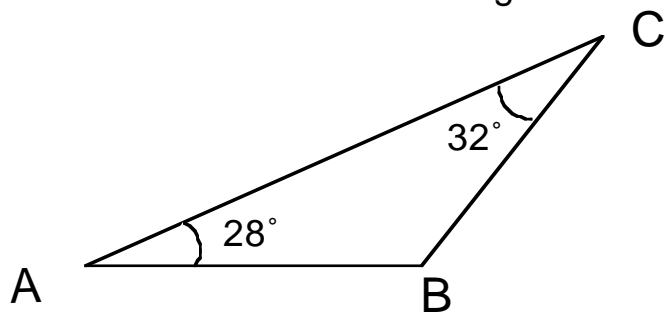
The vertical intercept of this line is:

- A) (0,-4) B) (3,0) C) (-3,0) D) (3,-4) E) (-4,0)
F) none of these

35. If $a = 14$ and $b = -10$, $\frac{5a^2 - 7b^2}{5a - 7b} = ?$

- A) 0 B) 2 C) 4 D) 8 E) 12
F) none of these

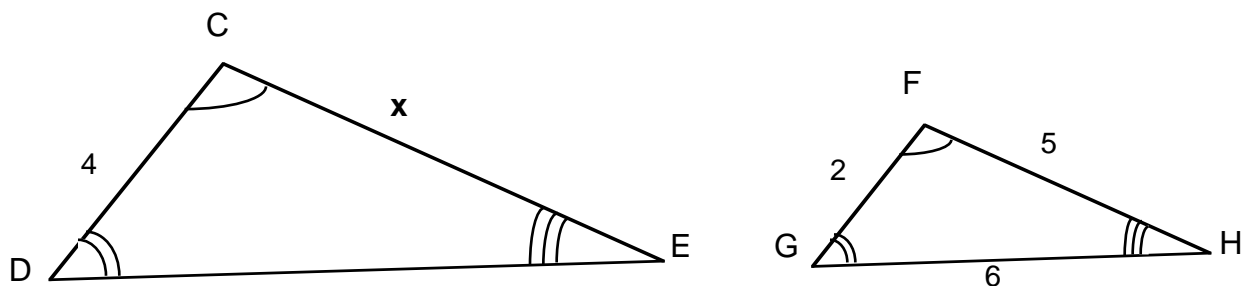
36. What is the measure of the angle $\angle B$?



$m \angle B = \underline{\hspace{2cm}}$

- A) 60 B) 30 C) 180 D) 120 E) 300
F) none of these

37. $\triangle CDE$ is similar to $\triangle FGH$. The length of \overline{CE} is _____.

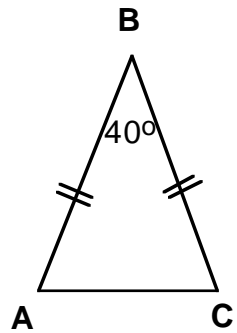


- A) 8 B) 16 C) 10 D) 12 E) 20
F) none of these

38. If $c + d = 17$ and $c = 2d - 1$, then $c =$

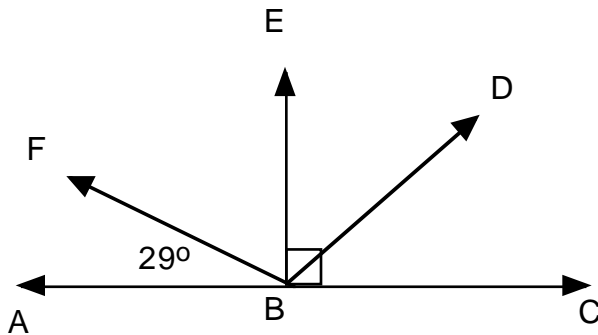
- A) 6 B) 8 C) 11 D) 17 E) 33
F) none of these

39. In the triangle below, the measure of angle A is: $m(\angle A) = \underline{\hspace{2cm}}$



- A) 50° B) 140° C) 70° D) 40° E) 45°
F) none of these

40. In the figure below, $m(\angle EBD) = 51^\circ$. $m(\angle DBC) = \underline{\hspace{2cm}}$

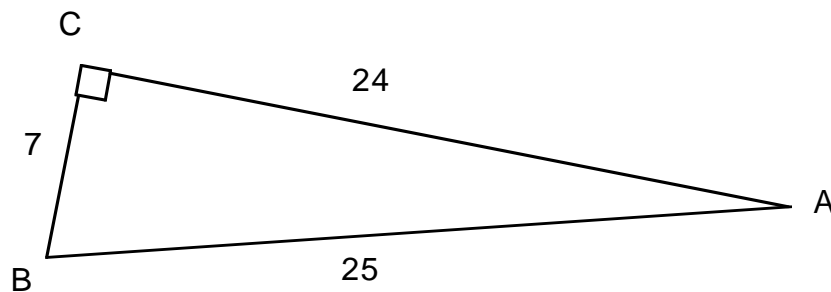


- A) 29° B) 119° C) 80° D) 39° E) 100°
F) none of these

41. The polynomial $14t^2 - 5t - 1$ can be factored as :

- A) $(14t - 1)(t + 1)$ B) $(14t + 1)(t - 1)$
C) $(7t - 1)(2t + 1)$ D) $(7t + 1)(2t - 1)$
E) $(4t - 1)(10t - 1)$ F) none of these

42. In $\triangle ABC$ below , $\sin A = ?$

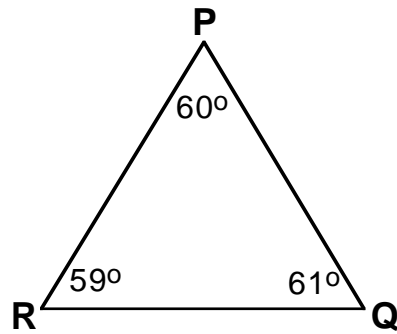


Hint: In a right triangle, the **sine** of an angle is the length of the **opposite** side divided by the length of the **hypotenuse**:

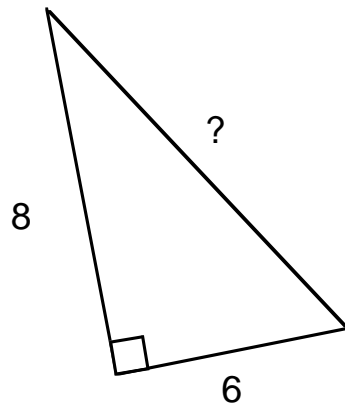
$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$$

- A) $\frac{25}{7}$ B) $\frac{7}{25}$ C) $\frac{24}{7}$ D) $\frac{7}{24}$ E) $\frac{24}{25}$
F) none of these

43. Given the triangle below, determine which statement must be true.

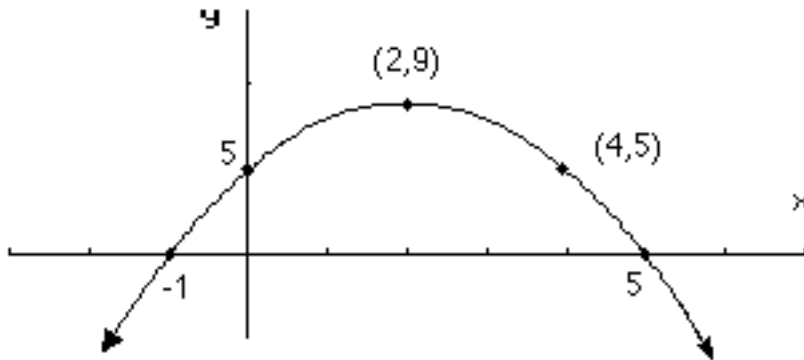


- A) \overline{QR} is the shortest side
B) \overline{QR} is the longest side
C) \overline{PQ} is the longest side
D) \overline{PR} is the longest side
E) \overline{PR} is the shortest side
F) none of these
44. In the given right triangle, the lengths of the legs are 6 and 8.
The length of the third side (the hypotenuse) is:



- A) $\sqrt{28}$ B) $\sqrt{14}$ C) 14 D) 10 E) 100
F) none of these

45.



Here is the graph of a function $y = f(x)$.
Which of the following statements is true?

- A) The function has a maximum at $x = 5$.
- B) The function has a minimum at $x = -1$.
- C) The vertical intercept of the graph is $(0, -1)$.
- D) The graph has two horizontal intercepts.
- E) The function has no maximum value.
- F) none of these

46. The **quadratic formula** can be used to solve the general quadratic equation $ax^2 + bx + c = 0$.

This formula is often stated as follows: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

If the quadratic formula is used to solve the equation $2x^2 - 5x - 18 = 0$ then one step in the work would be:

A) $x = \frac{-18 \pm \sqrt{18^2 - 4(2)(5)}}{2(2)}$

B) $x = \frac{-5 \pm \sqrt{5^2 - 4(2)(18)}}{2(2)}$

C) $x = \frac{-2 \pm \sqrt{2^2 - 4(-18)(5)}}{2(-18)}$

D) $x = \frac{5 \pm \sqrt{(-5)^2 - 4(2)(-18)}}{2(2)}$

E) $x = \frac{18 \pm \sqrt{(-18)^2 - 4(2)(-5)}}{2(2)}$

F) none of these

47. When the fraction $\frac{32 a^{24} b^6}{16 a^8 b^7}$ is simplified as much as possible, the result is:

A) $16 a^3 b$

B) $2 a^{16} b$

~~C) $\frac{16 a^{16}}{b}$~~

D) $\frac{2 a^{16}}{b}$

E) $\frac{2 a^3}{b}$

F) none of these

48. The formula $N = 40x - x^2$ describes the spread of a flu epidemic through a community.

x represents the number of days since the start of the epidemic

N represents the number of people who become sick on day x

How many people become sick on day 5 of the epidemic?

A) 5

B) 40

C) 50

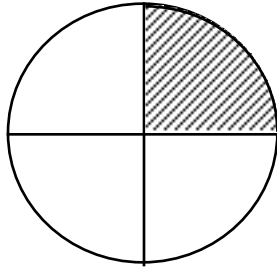
D) 65

E) 175

F) none of these

MATHEMATICS PLACEMENT TEST
(A few sample questions)

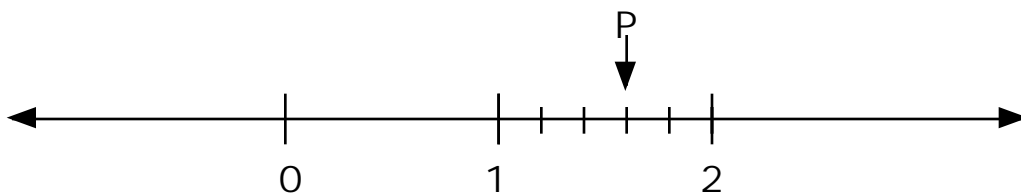
1. What percent of this diagram is shaded?



- A) 50% B) 25% C) 75% D) 37.5% E) $\frac{1}{4}$ %
F) none of these

1. 75%-80% answer correctly (B)	Placement Level A
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6. Point P represents the number:



- A) $1\frac{3}{4}$ B) $\frac{1}{2}$ C) $1\frac{3}{5}$ D) $1\frac{4}{6}$ E) $\frac{3}{5}$
F) none of these

6. 45%-50% answer correctly (C)	Placement Level A/B
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25. Which of the following numbers is the largest:

-5, 1, -3.2, $\frac{1}{30}$, 0.625

A) -5 B) 1 C) -3.2 D) $\frac{1}{30}$ E) 0.625

F) none of these

25. 75%-80% answer correctly(B)	Placement Level A/B
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19. For the equation $2x - y = 15$, the following pair of values (x,y) is a solution:

A) (9,3) B) (9,-3) C) (0,15) D) (10,-5) E) (8,0)

F) none of these

19. 45%-50% answer correctly(A)	Placement Level A/B
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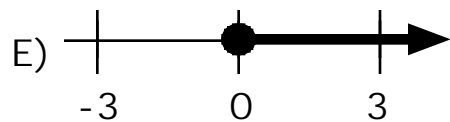
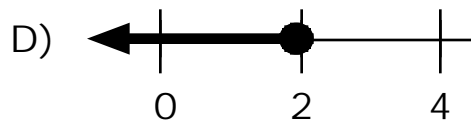
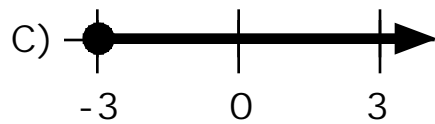
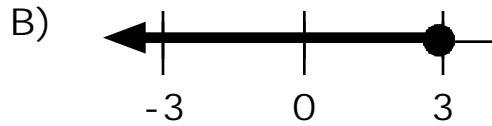
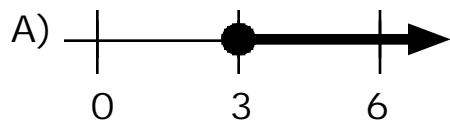
24. The solution of the equation $5(x - 7) = 2x + 1$ is:

A) 2 B) $\frac{8}{3}$ C) $\frac{36}{7}$ D) -12 E) 12

F) none of these

24. 60%-65% answer correctly(E)	Placement Level B
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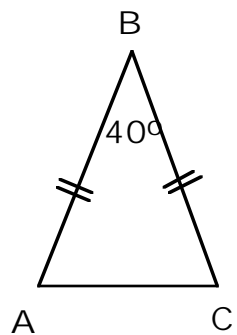
31. The graph of $x \geq 3$ on the number line is which of the following:



F) none of these

31. 60%-65% answer correctly(B) Placement Level B/C

39. In the triangle below, the measure of angle A is: $m(\angle A) = \underline{\hspace{2cm}}$

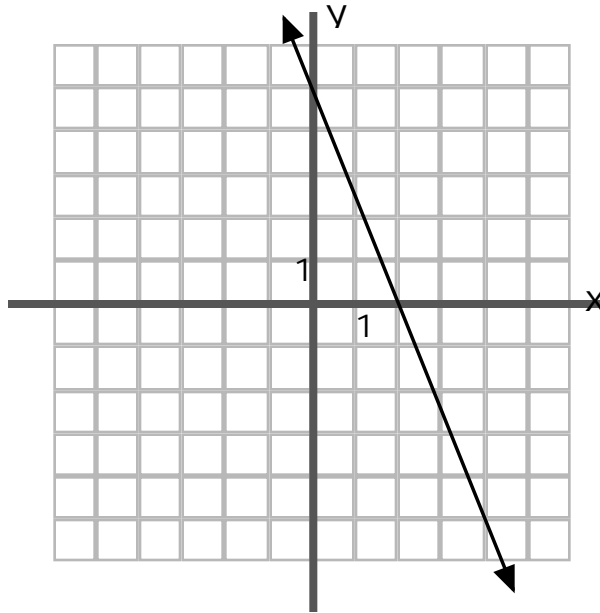


A) 50° B) 140° C) 70° D) 40° E) 45°

F) none of these

39. 50%-55% answer correctly Placement: Geometry

32. The equation $5x + 2y = 10$ is graphed below:



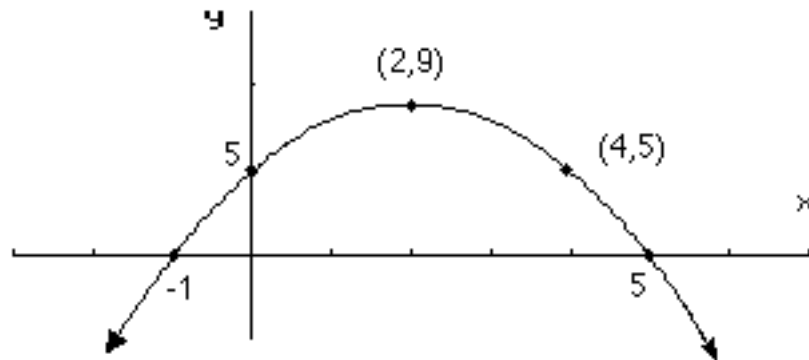
The slope of this line is

- A) $-\frac{5}{2}$ B) $\frac{5}{2}$ C) $\frac{2}{5}$ D) $-\frac{2}{5}$ E) 5

F) none of these

32. 20%-25% answer correctly(A) Placement: Level B/C
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45.



Here is the graph of a function $y = f(x)$.

Which of the following statements is true?

- A) The function has a maximum at $x = 5$.
- B) The function has a minimum at $x = -1$.
- C) The vertical intercept of the graph is $(0, -1)$.
- D) The graph has two horizontal intercepts.
- E) The function has no maximum value.
- F) none of these

45. 20%-25% answer correctly(D)	Placement: Level C/D
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