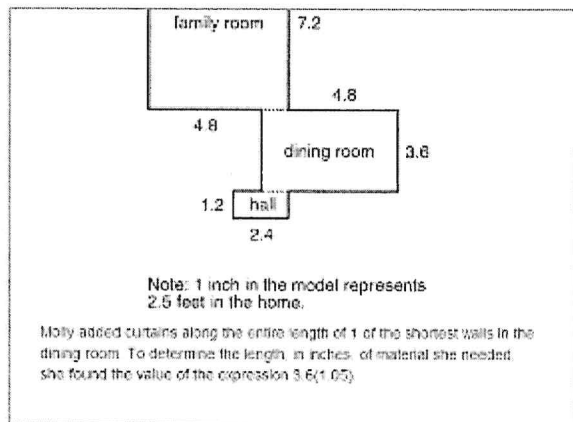


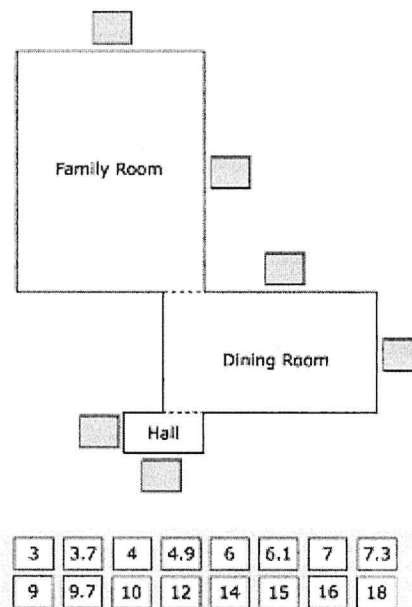
Name: _____

Question 20



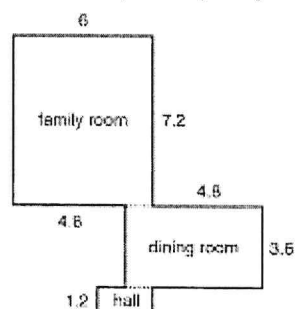
What are the measurements, in feet, of the rooms and hall on the bottom floor of Molly's home that correspond to the measurements shown in the floor plan?

Drag the numbers into the empty boxes.



Question 21

Molly built a dollhouse that is a scale model of her home. The floor plan for the bottom floor of the dollhouse is shown below, with measurements in inches. The rooms and hall are represented by rectangles.



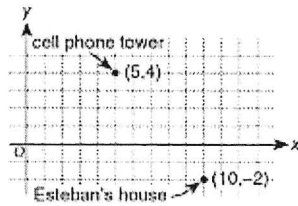
Which of the following expressions is equivalent to the expression Molly used to determine the length, in inches, of material she needed for curtains?

- ☐ A. $3.6(0.05)$
- ☐ B. $3.6 + 0.05$
- ☐ C. $3.6 + 5(3.6)$
- ☐ D. $3.6(1 + 1.05)$
- ☐ E. $3.6(1 + 0.05)$

2020 AMI Grades 9-12 Mathematics

Question 22

A map of Nelson County is laid out in the standard (x,y) coordinate plane below, where the center of the county is at $(0,0)$. A cell phone tower is at $(5,4)$ and Esteban's house is at $(10,-2)$. Each coordinate unit represents 1 mile. The tower's signal range is 10 miles in all directions.

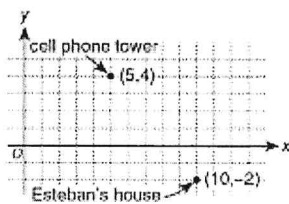


How much land area, to the nearest 10 square miles, does the tower's signal range cover?

- ☐ A. 60
- ☐ B. 100
- ☐ C. 310
- ☐ D. 400
- ☐ E. 1,250

Question 23

A map of Nelson County is laid out in the standard (x,y) coordinate plane below, where the center of the county is at $(0,0)$. A cell phone tower is at $(5,4)$ and Esteban's house is at $(10,-2)$. Each coordinate unit represents 1 mile. The tower's signal range is 10 miles in all directions.

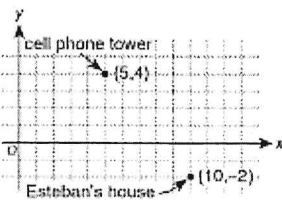


The strength of the tower's signal to Esteban's house depends on the straight-line distance between his house and the tower. What is the straight-line distance, in miles, between Esteban's house and the tower?

- ☐ A. $\sqrt{1}$
- ☐ B. $\sqrt{17}$
- ☐ C. $\sqrt{29}$
- ☐ D. $\sqrt{41}$
- ☐ E. $\sqrt{61}$

Question 24

A map of Nelson County is laid out in the standard (x,y) coordinate plane below, where the center of the county is at $(0,0)$. A cell phone tower is at $(5,4)$ and Esteban's house is at $(10,-2)$. Each coordinate unit represents 1 mile. The tower's signal range is 10 miles in all directions.



The tower's signal range directly above a point (a,b) on the ground extends to an altitude, in miles, given by the function $f(a,b) = \sqrt{58 - a^2 + 10a - b^2 + 85}$. A jet directly above Esteban's house is within the tower's signal range. What is the maximum altitude, in miles, of the jet?

- ☐ A. $\sqrt{13}$
- ☐ B. $\sqrt{19}$
- ☐ C. $\sqrt{39}$
- ☐ D. $\sqrt{47}$
- ☐ E. $\sqrt{51}$

Students did 2 experiments to estimate the mass of water present in margarines and in hand lotions.

Experiment 1

The students measured out a 25 gram (g) sample of Margarine A in a glass beaker. The sample was heated until it completely melted. Upon cooling, a solid layer formed on top of a liquid water layer. A small hole was made in the solid layer, and the liquid water was poured out. The mass of solid remaining in the beaker was measured. Then, the mass of water in the margarine sample was calculated. The procedure was repeated for Margarines B, C, and D (see Table 1).

Table 1		
Margarine	Mass of solid remaining (g)	Mass of water in margarine sample (g)
A	24	1
B	13	12
C	19	6
D	11	14

Experiment 2

The students measured out a 25 g sample of Lotion E in a glass beaker. The sample was heated to boiling and then allowed to gently boil for 30 minutes. After the mixture cooled to room temperature, the mass of lotion remaining in the beaker was measured. Then, the mass of water in the lotion sample was calculated. The procedure was repeated for Lotions F, G, and H (see Table 2).

Table 2		
Lotion	Mass of lotion remaining (g)	Mass of water in lotion sample (g)
E	19	6
F	21	4
G	20	5
H	18	7

17. Based on Table 1, the mass of solid remaining for Margarine A was how much greater than the mass of solid remaining for Margarine D ?

- A. 5 g
- B. 11 g
- C. 13 g
- D. 24 g

18. What was the *minimum* mass of lotion needed to perform Experiment 2 ?

- A. 50 g
- B. 100 g
- C. 150 g
- D. 200 g

19. Suppose the students had mixed a 12.5 g sample of Margarine B and a 12.5 g sample of Margarine C. Further suppose that they had tested this mixed sample following the procedure from Experiment 1. Based on Table 1, predict the most likely mass, in grams, of water in the mixed sample. Explain your answer using specific numbers from Table 1.

Writing Skills

Sentence Structure

Read the passage, and then answer the questions below it. }

In Scene 5 of Tennessee Williams's play *The Glass Menagerie*, Tom tells his
 1
 mother that he has invited a gentleman caller for dinner, she immediately starts
 to make a fuss. She decides: that the silverware must be polished, the table cloth
 2
 must be washed, and the windows must be cleaned. Before she begins making
 3
 the house presentable, however, Amanda grills her son about his. She wants to
 4
 know, what his name is, how much he makes, how handsome he is, and whether
 he drinks. Tom warns his mother not to expect the caller to be smitten by Laura.
 5
 most people seem to find Amanda's daughter peculiar.

- 1 Which of the following is needed in section 1?
 - A Add *and* after the second comma.
 - B Delete the second comma.
 - C Change *starts* to *started*.
 - D Put the title of the play in quotation marks.
- 2 Which of the following is needed in section 2?
 - A Delete *that*.
 - B Delete the comma before the word *and*.
 - C Replace the colon with a comma.
 - D Delete the colon.
- 3 Which of the following is needed in section 3?
 - A Change the first comma to a semicolon.
 - B Change *his* to *he*.
 - C Change *his* to *the caller*.
 - D Change *grills* to *will grill*.
- 4 Which of the following is needed in section 4?
 - A Delete the comma after *know*.
 - B Change the period to a question mark.
 - C Delete the comma after *know*, and change the period to a question mark.
 - D Delete the comma before *and*.
- 5 Which of the following is needed in section 5?
 - A Delete the comma.
 - B Add the word *although* after the comma.
 - C Change the comma to *because*.
 - D Change *Amanda's* to *Amandas*.

Reading Comprehension

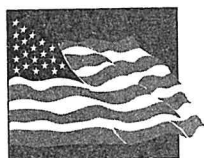
Context

Read the passage, and then answer the questions below it. 1

Suddenly he felt himself whirled round and round—spinning like a top. The water, the banks, the forests, the now distant bridge, fort and men—all were commingled and blurred. Objects were represented by their colors only; circular
1 horizontal streaks of color—that was all he saw. He had been caught in a vortex
2 and was being whirled on with a velocity of advance and gyration that made him
3 4 giddy and sick. In a few moments he was flung upon the gravel at the foot of the
5 left bank of the stream—the southern bank—and behind a projecting point which
6 concealed him from his enemies.

—"An Occurrence at Owl Creek Bridge" by Ambrose Bierce

- | | |
|--|--|
| <p>1 In this passage, the word <u>commingled</u> means—
A large
B mixed
C elevated
D spacious</p> <p>2 In this passage, the word <u>vortex</u> means—
A trap
B ditch
C whirlpool
D fight</p> <p>3 The word <u>advance</u> in this passage means—
A forward movement
B improvement
C increase in price
D payment of money</p> | <p>4 The word <u>gyration</u> in this passage means—
A reflection
B violence
C combustion
D revolution</p> <p>5 In this passage, the word <u>giddy</u> means—
A dizzy
B unconscious
C lighthearted
D detached</p> <p>6 The word <u>projecting</u> in this passage means—
A visual
B protruding
C jagged
D throwing</p> |
|--|--|



HISTORICAL DOCUMENT 31

The Voting Rights Act, 1965

TEN years after the Supreme Court decision in *Brown v. Board of Education of Topeka, Kansas*, African Americans living in the Southern States were still far from achieving equal rights. Although they made up 20 percent of the southern population, only seven and a half percent of the region's registered voters were African Americans. Some eight months after the passage of the Civil Rights Act, President Lyndon Johnson televised an appeal to the American people to support a law that would end discrimination at the polls. Congress passed the Voting Rights Act in March 1965. Since then, the African-American vote has played a major role on the American political scene.

SEC. 4. (a) To assure that the right of citizens of the United States to vote is not denied or abridged on account of race or color, no citizen shall be denied the right to vote in any Federal, State, or local election because of his failure to comply with any test or device in any State. . . .

(c) The phrase "test or device" shall mean any requirement that a person as a prerequisite for voting or registration for voting (1) demonstrate the ability to read, write, understand, or interpret any matter, (2) demonstrate any educational achievement or his knowledge of any particular subject, (3) possess good moral character, or (4) prove his qualifications by the voucher of registered voters or members of any other class. . . .

(e)(1) Congress hereby declares that to secure the rights under the fourteenth amendment of persons educated in American-flag schools in which the predominant classroom language was other than English, it is necessary to prohibit the States from conditioning the right to vote of such persons on ability to read, write, understand, or interpret any matter in the English language.

. . . [If the] Attorney General certifies . . . that (1) he has received complaints in writing from twenty or more residents of such political subdivi-

sion alleging that they have been denied the right to vote under color of law on account of race or color, and that he believes such complaints to be meritorious, or (2) that in his judgment (considering, among other factors, whether the ratio of non-white persons to white persons registered to vote appear to him to be reasonably attributable to violations of the fifteenth amendment . . .), the appointment of examiners is otherwise necessary . . . the Civil Service Commission shall appoint as many examiners . . . as it may deem appropriate to prepare and maintain lists of persons eligible to vote in Federal, State, and local elections. . .

Sec. 10. (a) The Congress finds that the requirement of the payment of a poll tax as a precondition to voting (i) precludes persons of limited means from voting or imposes unreasonable financial hardship upon such persons as a precondition to their exercise of the franchise, (ii) does not bear a reasonable relationship to any legitimate State interest in the conduct of elections, and (iii) in some areas has the purpose of denying persons the right to vote because of race or color. Upon the basis of these findings, Congress declares that the constitutional right of citizens to vote is denied or abridged in some areas by the requirement of the payment of a poll tax as a precondition to voting. . . .

QUESTIONS FOR DISCUSSION - Answer on back

1. Why was the Voting Rights Act passed?
2. What educational standards are required by the Act?
3. What device, used to deny suffrage to poor people, and African Americans in particular, is forbidden by the Voting Rights Act?

Answer Discussion Questions Below: