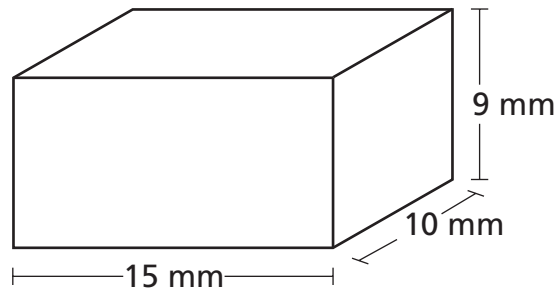Answer questions 1–40. Answer questions outlined in green in your test book. Answer all other questions on the Answer Form.

1 A rectangular prism is shown below.

9 mm

10 mm

├──15 mm──┤

[not drawn to scale]

Part A

Which expression can be used to find the greatest number of 1-millimeter unit cubes that could be packed into the prism? Mark all that apply.

A 150×9

B 135×10

C 100×19
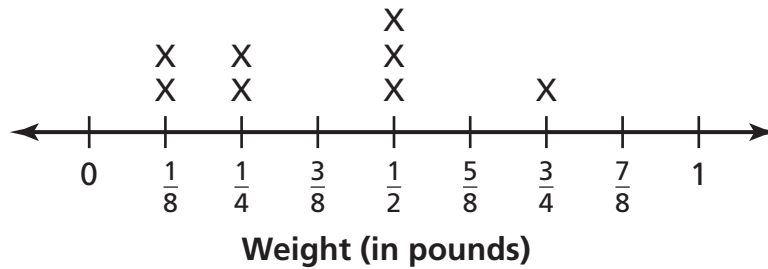
D 90×15

E 19×15

Part B

What is the volume of the prism?

A 1,500 mm³

B 1,350 mm³

C 285 mm³

D 225 mm³

2   A store sells packs of coffee that weigh fractions of a pound. The line plot below shows the numbers of packs of different weights that are in stock.

COFFEE PACKS AT THE STORE

```
                            X
         X    X             X
         X    X             X              X
   ←──┼────┼────┼────┼────┼────┼────┼────┼──→
      0    1    1    3    1    5    3    7    1
           ─    ─    ─    ─    ─    ─    ─
           8    4    8    2    8    4    8
```

Weight (in pounds)

Part A

What is the total weight of the coffee that the store has in stock?

A $\frac{13}{8}$ pounds

B $\frac{9}{4}$ pounds

C   3 pounds

D   4 pounds

Part B

Which statements are true? Mark all that apply.

A   The total weight of the four heaviest packs is $2\frac{1}{2}$ pounds.

B   The heaviest pack is $\frac{5}{8}$ pound heavier than the lightest pack.

C   There are three packs that have a combined weight of $\frac{3}{8}$ pound.

D   The total weight of the four lightest packs is equal to the weight of the heaviest pack.

Go On

3 Which expression is equivalent to the expression "24 divided by the difference of 8 and 2"?

A $24 \div 8 - 2$

B $24 \div (8 - 2)$

C $24 \div 2 - 8$

D $24 \div (2 - 8)$

4 Miranda made 6.88 pounds of trail mix. She used 4.96 pounds of granola for the mix. Miranda wrote the equation $w + 4.96 = 6.88$ to represent the weight of other ingredients, w, she used for the trail mix.

Part A

Write a subtraction equation you could use to find the weight, w, of the other ingredients Miranda used.

Part B

What was the weight of the ingredients other than granola in Miranda's trail mix?

Show your work.

Answer _____ pounds

Part C

How many more pounds of granola did Miranda use than the other ingredients?

Show your work.

Answer _____ pounds

5

Part A

Matt drew a quadrilateral with both pairs of opposite sides parallel and equal in length. Which statements are true? Mark all that apply.

A   It could be a rectangle.

B   It must be a square.

C   It could be a triangle.

D   It must be a parallelogram.

Part B

Rebecca drew a quadrilateral with at least one pair of opposite sides that are parallel. Which statements are true? Mark all that apply.

A   It must be a rectangle.

B   It must be a parallelogram.

C   It could be a square.

D   It could be a rhombus.

Go On

6 Which expression represents the statement "subtract 8 from 18, then divide by 5"? Mark all that apply.

A $(18 - 8) \div 5$

B $18 - 8 \div 5$

C $8 - 18 \div 5$

D $5 \div (18 - 8)$

E $\dfrac{(18 - 8)}{5}$

7 A plot of land is $\frac{1}{2}$ mile long. The plot is divided into four sections of equal length. What is the length of each section?

A $\frac{1}{8}$ mi

B $\frac{1}{6}$ mi

C $\frac{4}{2}$ mi

D $\frac{8}{1}$ mi

E $\frac{9}{2}$ mi

Go On

8 Colby wants to set square tiles on the top of a wooden box. The top of the box is a rectangle $7\frac{1}{2}$ inches long and $5\frac{1}{2}$ inches wide.

Part A

How many $\frac{1}{2}$-inch square tiles would Colby need to cover the top of the box?

Show your work.

Answer _____

Part B

How many $\frac{1}{4}$-inch square tiles would Colby need to cover the top of the box?

Show your work.

Answer _____

Part C

Could Colby use $\frac{3}{4}$-inch square tiles to cover the top of the box, without gaps or overlaps?
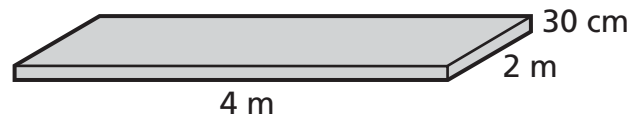
Explain why or why not.

_____

_____

_____

_____

9 Maeve has 2 cubic meters of soil. Does she have enough to fill a garden bed with the dimensions shown? (1 meter = 100 centimeters)

30 cm
2 m
4 m

Show your work.

Answer _____

10 How many zeros will be in the simplified expression 4×10^x if x is any whole number?

A x

B $x - 1$

C $x + 1$

D $4x$

Go On

11 Which fraction represents the expression 3 ÷ 8?
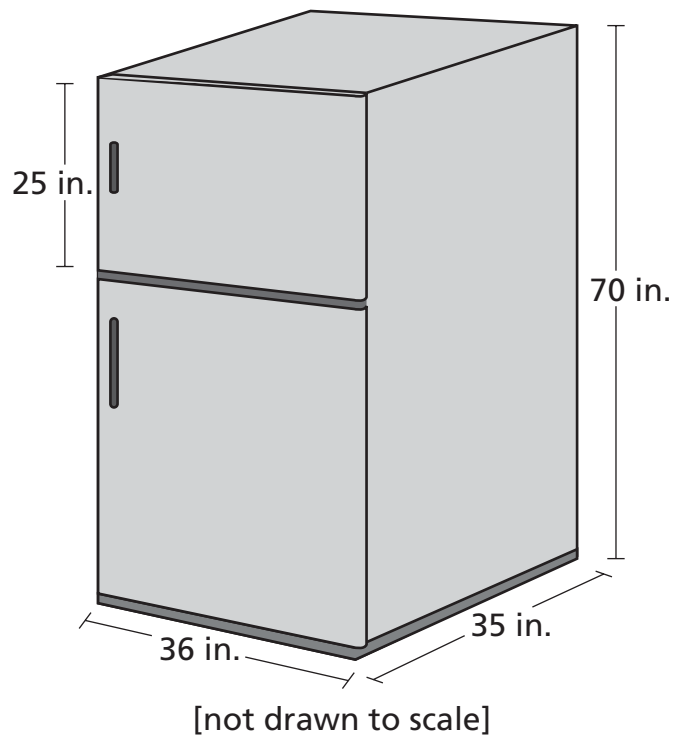
A $\frac{8}{3}$

B $\frac{5}{8}$

C $\frac{3}{8}$

D $\frac{8}{5}$

12 Jacob's refrigerator is shown below.

25 in.

70 in.

36 in.

35 in.

[not drawn to scale]

Part A

What is the volume, in cubic inches, of the top part of Jacob's refrigerator?

Show your work.

Answer _____ cubic inches

Part B

What is the volume, in cubic inches, of the bottom part of Jacob's refrigerator?

Show your work.

Answer _____ cubic inches

Part C

How much greater is the volume of the bottom part of the refrigerator than the volume of the top part?

Show your work.

Answer _____

Go On

13 A factory receives an order to ship at least 45,000 parts.

Part A

Which shipments contain enough parts for this order? Mark all that apply.

A   315 boxes of 144 parts

B   270 boxes of 164 parts

C   215 boxes of 212 parts

D   190 boxes of 240 parts

Part B

The factory ships 225 boxes to fill the order. The total price of the parts in each box is $3,990. What is the total value of the shipment?

A $875,250

B $877,500

C $879,525

D $897,750

14 Which set of coordinates follows these two rules?

x-coordinate: Start with 4 and add 4 to each term.

y-coordinate: Start with 4 and multiply each term by 2.

A (4, 4), (8, 8), (12, 16)

B (4, 4), (8, 8), (16, 16)

C (4, 4), (6, 16), (8, 64)

D (4, 4), (16, 2), (64, 0)

15 A gasoline truck is carrying 189.271 liters of gasoline. What is this number in expanded form?

A $1 + 8 + 9 + \left(\frac{2}{10}\right) + \left(\frac{7}{100}\right) + \left(\frac{1}{1,000}\right)$

B $(1 \times 100) + (8 \times 10) + (9 \times 1) + \left(2 \times \frac{1}{10}\right) + \left(7 \times \frac{1}{100}\right) + \left(1 \times \frac{1}{1,000}\right)$

C $1 \times 8 \times 9 \times 10 \times 2 \times \left(7 + \frac{1}{10}\right) \times \left(1 + \frac{1}{100}\right)$

D $(1 \times 10,000) + (8 \times 1,000) + (9 \times 100) + (2 \times 10) + (7 \times 1) + \left(1 \times \frac{1}{10}\right)$

Go On

16 Kara and Abby have entered a high-jump competition. They are trying to break the school record of $4\frac{1}{2}$ feet. The table below shows the height of each of their first jumps.

Competitor	First Jump
Kara	$3\frac{3}{4}$ feet
Abby	$3\frac{11}{12}$ feet

Part A

Kara's second jump was $\frac{1}{2}$ foot higher than her first jump. Abby's second jump was $\frac{1}{4}$ foot higher than her first jump.

Kara's third jump was $\frac{2}{3}$ foot higher than her first jump. Abby's third jump was $\frac{3}{4}$ foot higher than her first jump.

Complete the table to show the heights of the girls' second and third jumps.

Competitor	Second Jump	Third Jump
Kara	feet	feet
Abby	feet	feet

Part B

Who had the higher second jump, and by how much? Choose a name and number to complete the statement.

Kara   Abby $\dfrac{1}{2}$ $\dfrac{1}{3}$ $\dfrac{1}{4}$ $\dfrac{1}{6}$ $\dfrac{1}{12}$

Answer _____ had the higher second jump by _____ foot.

Part C

Which girl broke the school record on her third jump, and by how much? Choose a name and number to complete the statement.

Kara   Abby $\dfrac{1}{2}$ $\dfrac{1}{3}$ $\dfrac{1}{4}$ $\dfrac{1}{6}$ $\dfrac{1}{12}$

Answer _____ broke the school record by _____ foot.

Go On

17 Carlo has a cube that is 1 unit long, 1 unit wide, and 1 unit high. What is the volume of Carlo's cube?

A 1 unit

B 3 units

C 1 cubic unit

D 3 cubic units

18 Which statement about a rhombus is *never* true?

A It also is a rectangle.

B It also is a hexagon.

C It also is a square.

D It also is a parallelogram.

19 An art teacher has 9 students in a pottery class. He has 21.06 kilograms of clay that he divides evenly among all the students. How many kilograms of clay will each student receive?

Show your work.

Answer _____ kilograms

20 Meg and Theo each thought of 5 numbers. Meg's first number was 0, and so was Theo's. Meg added 2 each time to get her other numbers, and Theo added 4 each time.

Part A

What were Meg's numbers? Fill in the blanks to complete the statement.

Answer Meg's numbers were 0, _____, _____, _____, and _____.

Part B

What were Theo's numbers? Fill in the blanks to complete the statement.

Answer Theo's numbers were 0, _____, _____, _____, and _____.

Part C

Compare Theo's first number to Meg's first number, compare Theo's second number to Meg's second number, and so on. What is the relationship between Theo's numbers and Meg's numbers? Fill in the blank to complete the statement.

Answer Theo's numbers are _____ times Meg's numbers.

Part D

Would the relationship from Part C have been true if Meg's first number and Theo's first number were not 0? Explain your reasoning.

_____

_____

_____

_____

Go On

21 Which statement is true? Mark all that apply.

A $\frac{2}{7} \times \frac{3}{8} < \frac{3}{8}$ because $\frac{2}{7} < 1$
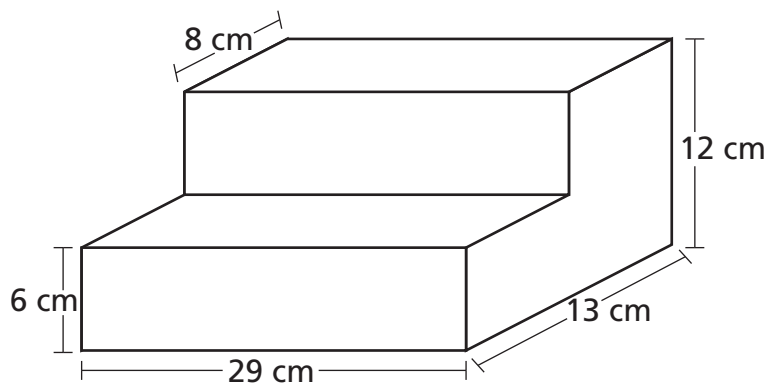
B $\frac{2}{7} \times \frac{3}{8} > \frac{3}{8}$ because $\frac{2}{7} > 1$

C $\frac{2}{7} \times \frac{3}{8} > \frac{2}{7}$ because $\frac{3}{8} > 1$

D $\frac{2}{7} \times \frac{3}{8} < \frac{2}{7}$ because $\frac{3}{8} < 1$

22 The figure below is composed of two rectangular prisms.

[not drawn to scale]

Which expressions can be simplified to find the volume of the figure? Mark all that apply.

A (6 cm × 29 cm × 5 cm) + (6 cm × 29 cm × 8 cm)

B (6 cm × 29 cm × 5 cm) + (12 cm × 29 cm × 8 cm)

C (6 cm × 29 cm × 13 cm) + (6 cm × 29 cm × 8 cm)

D (6 cm × 29 cm × 13 cm) + (12 cm × 29 cm × 8 cm)

23 Which expression has a value equivalent to the product $\frac{7}{11} \times 1$?

A $\quad \frac{7 + 3}{11 + 3}$

B $\quad \frac{7 \div 7}{11 \div 11}$

C $\quad \frac{7 \times 3}{11 \times 3}$

D $\quad \frac{7 - 3}{11 - 3}$

Go On

24 A cereal company requires each of its boxes to contain more than 16.118 and less than 16.134 ounces of cereal. If a box contains the right amount, it can be sold. If not, the box cannot be sold.

Part A

A certain box of cereal contains 16.122 ounces of cereal. Choose from the symbols and words shown to complete the statements.

$>$ $<$ $=$ can   cannot

Answer 16.122 _____ 16.118

Answer 16.122 _____ 16.134

Answer The box of cereal _____ be sold.

Part B

Another box of cereal contains 16.134 ounces of cereal. Choose from the symbols and words shown to complete the statements.

$>$ $<$ $=$ can   cannot

Answer 16.134 _____ 16.118

Answer 16.134 _____ 16.134

Answer The box of cereal _____ be sold.

Part C

Give an example of a box of cereal that can be sold and a box of cereal that cannot be sold. Compare the number of ounces of cereal in each box to 16.118 ounces and 16.134 ounces to support your answer.

_____

_____

_____

25 Which situation can be modeled by the expression $4 \div \frac{1}{3}$?

A   Beni separates 4 quarts of paint into 3 equal jars.

B   Beni puts $\frac{1}{3}$ quart of paint in each of 4 jars.

C   Beni has 4 quarts of paint and puts $\frac{1}{3}$ quart into a jar.

D   Beni fills as many $\frac{1}{3}$-quart jars as he can with 4 quarts of paint.

26 A geologist finds the masses of four mineral samples. He only keeps the samples that have a mass **greater than** 4.32 kilograms. He discards the others.

Part A

Look at each sample mass. Which samples will he keep? Mark all that apply.

A   4.275 kilograms

B   4.320 kilograms

C   4.322 kilograms

D   4.418 kilograms

Part B

The geologist keeps samples with masses of 4.352, 4.523, and 4.325 kilograms. Which shows these masses in order from **greatest** to **least**?

A   4.325, 4.352, 4.523

B   4.325, 4.523, 4.352

C   4.523, 4.325, 4.352

D   4.523, 4.352, 4.325

Go On

27 What is $1\frac{1}{2}$ subtracted from the sum of $4\frac{2}{3}$ and $5\frac{2}{5}$?

A $7\frac{7}{30}$

B $8\frac{4}{15}$

C $8\frac{17}{30}$

D $8\frac{11}{15}$

28 Vernon is trying to draw a square in a coordinate plane. He started with these points:
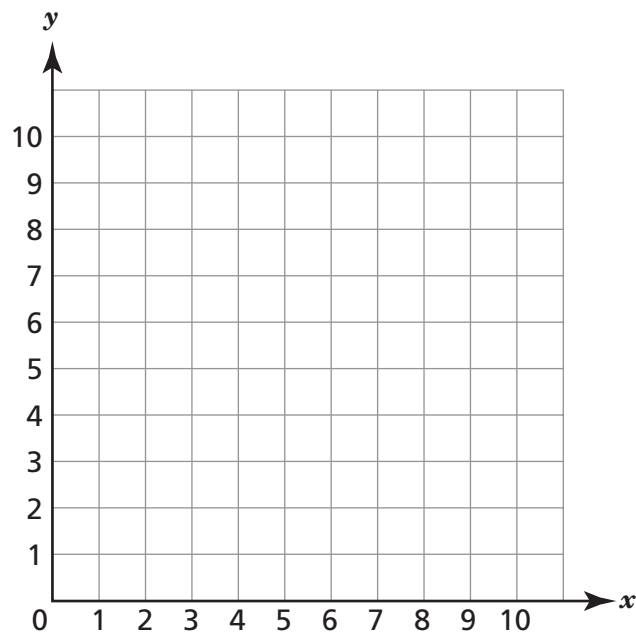
point A at (2, 3)

point B at (2, 7)

point C at (6, 7)

Part A

Plot the points A, B, and C on the coordinate plane below.

Part B

Fill in the blanks to complete the statements to describe the location of these points.

Answer   To get to point *A* from the origin, go _____ units to the right and _____ units up.

Answer   To get to point *B* from the origin, go _____ units to the right and _____ units up.

Part C

Suppose Vernon wants to plot point *D* as the fourth corner of the square. Where should he plot it? Explain your reasoning.
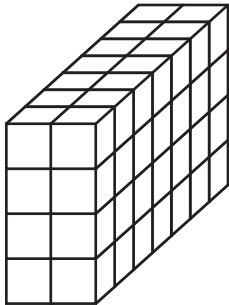
_____

_____

_____

_____

_____

Go On

29 Ashwin and Dora each start with a cube made up of smaller 1-centimeter cube blocks. Then they each try to use some or all of the cubes to build different prisms.
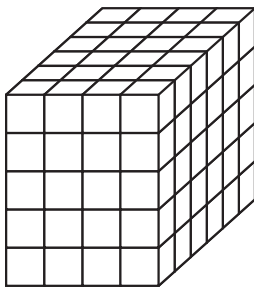
Part A

Ashwin begins with a cube with an edge length of 4 centimeters. Examine each prism. Which prisms will Ashwin be able to build with his cubes? Mark all that apply.
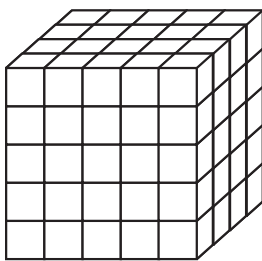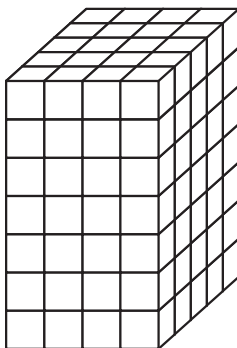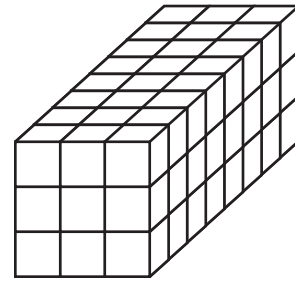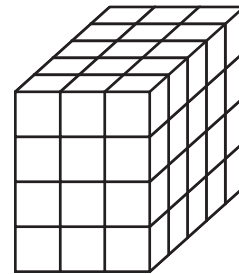
A

B

C

D

Part B

Dora begins with a cube with an edge length of 5 centimeters. Examine each prism. Which prisms will Dora be able to build with her cubes? Mark all that apply.
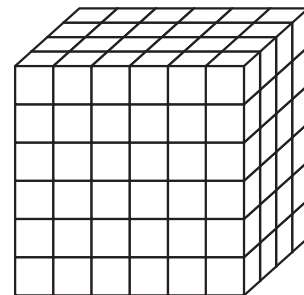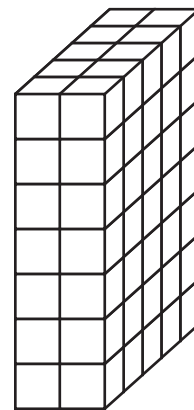
A

B

C

D

30 Which correctly compares the two different values of the digit 8 in the number 428.87?

A $0.8 = 8 \div \frac{1}{10}$

B $0.8 = 8 \times \frac{1}{10}$

C $8 > 0.8 \div \frac{1}{10}$

D $8 < 0.8 \times \frac{1}{10}$

31 Makoto's lacrosse practice lasts $1\frac{3}{4}$ hours. This week he attended the entire practice on Monday and Wednesday, but he had to leave halfway through practice on Friday. How many hours did Makoto spend at lacrosse practice this week?

A $4\frac{3}{8}$

B $4\frac{1}{4}$

C $\frac{3}{4}$

D $\frac{1}{8}$

Go On

32 Greg wants to put the following products in order from least to greatest.

$18 \times \dfrac{37}{2}$
$\dfrac{37}{2} \times 16\dfrac{1}{2}$
$18 \times 19\dfrac{1}{2}$
$\dfrac{37}{2} \times \dfrac{35}{2}$

Part A

Greg started by comparing $18 \times \dfrac{37}{2}$ and $18 \times 19\dfrac{1}{2}$ because the products shared a common factor.

He said that $18 \times 19\dfrac{1}{2}$ is less than $18 \times \dfrac{37}{2}$ because 19 is less than 37. Is his reasoning correct? Explain.

_____

_____

_____

Part B

Greg next compared $18 \times \frac{37}{2}$, $\frac{37}{2} \times 16\frac{1}{2}$, and $\frac{37}{2} \times \frac{35}{2}$.

He used the following inequality to order the products.

$$16\frac{1}{2} < 17\frac{1}{2} < 18$$

$$\frac{37}{2} \times 16\frac{1}{2} < \frac{37}{2} \times \frac{35}{2} < 18 \times \frac{37}{2}$$
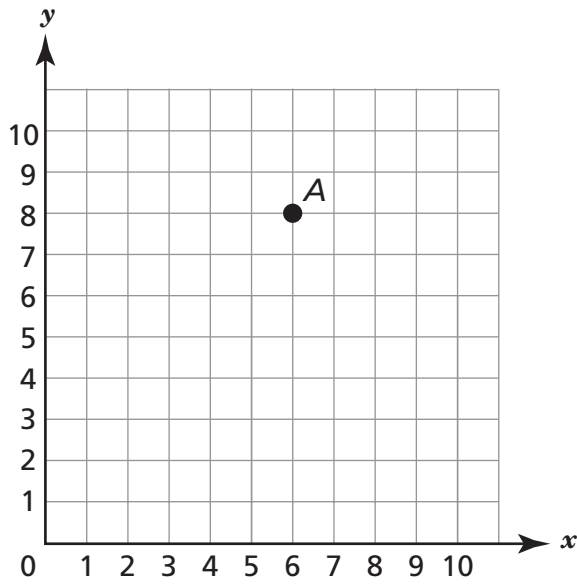
Is Greg's list of products correct? Explain.

_____

_____

_____

Part C

Where should Greg put the product $18 \times 19\frac{1}{2}$ in the list? Why?
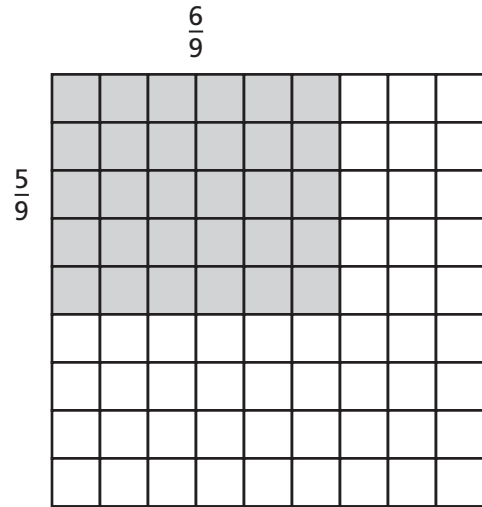
_____

_____

_____

Go On

33 Point *A* is shown on the coordinate plane below.

What is the *x*-coordinate of Point *A*?

A 8

B 6

C 9

D 7

34 Examine the figure below.

Which equation does the model represent?

A $\dfrac{6}{9} \times \dfrac{5}{9} = \dfrac{45}{54}$

B $\dfrac{6}{9} \times \dfrac{5}{9} = \dfrac{51}{81}$

C $\dfrac{6}{9} \times \dfrac{5}{9} = \dfrac{30}{51}$

D $\dfrac{6}{9} \times \dfrac{5}{9} = \dfrac{30}{81}$

35   The opposite sides of any parallelogram are the same length.

Part A

Draw a diagram to illustrate this statement.

Part B

Does this statement tell you anything about the opposite sides of any rhombus?
Use the relationship between parallelograms and rhombi to explain your answer.

_____

_____

Go On

36 Mrs. Meltzer asked the students in her class to round the number 32.158 to different place values.

Part A

What is the number 32.158 rounded to the nearest tenth and to the nearest hundredth? Fill in the blanks to complete the statement.

Answer The number 32.158 rounded to the nearest tenth is _____, and rounded to the

nearest hundredth is _____ .

Part B

Which is greater – the number rounded to the nearest tenth or the number rounded to the nearest hundredth? Choose from the words shown to complete the statement.

tenth   hundredth

Answer The number rounded to the nearest _____ is greater than the number

rounded to the nearest _____.

Part C

Will your answer for Part B be true for any decimal? Explain your reasoning.

_____

_____

_____

_____

_____

37 Gelisa caught one fish with a mass of 1.78 kilograms, and a second fish with a mass of 1.46 kilograms. What is the total mass of the two fish, rounded to the nearest tenth?

    A   3.3 kg

    B   3.2 kg

    C   3.1 kg

    D   3.0 kg

---

38 A baker bought 7,500 grams of flour. How many kilograms of flour did she buy?

Show your work.

Answer _____ kilograms

---

39 Lynn has 1 hour to work on homework before dinner. She needs to spend $\frac{5}{12}$ hour on science homework and $\frac{2}{5}$ hour on reading homework. Which estimate **best** explains whether Lynn has enough time to finish her homework before dinner?

    A   Lynn does not have enough time because $\frac{5}{12} > \frac{1}{2}$, so the sum of $\frac{5}{12}$ and $\frac{2}{5}$ is greater than 1.

    B   Lynn has enough time because $\frac{5}{12}$ and $\frac{2}{5}$ both are less than $\frac{1}{2}$, so their sum is less than 1.

    C   Lynn does not have enough time because $\frac{5}{12}$ and $\frac{2}{5}$ both are greater than $\frac{1}{2}$, so their sum is greater than 1.

    D   Lynn has enough time because $\frac{5}{12}$ and $\frac{2}{5}$ both are equal to $\frac{1}{2}$, so their sum is exactly 1.

Go On

40 John, Michael, Kelly, and Sue are students in the same class. Each made a model of a rectangular prism on his or her computer using unit cubes with edge lengths of 1 unit. The numbers of unit cubes that each used are shown below.

Student	Number of Unit Cubes Used
John	18
Michael	18
Kelly	22
Sue	22

Part A

If there were no gaps or overlaps of the unit cubes in John's drawing of a prism, what was the volume of the prism? Fill in the blank to complete the statement.

Answer   The volume of John's prism was _____ cubic units.

Part B

If there were small gaps between some of the unit cubes in Michael's drawing of a prism, what could have been the volume of the prism? Explain your reasoning.

_____

_____

_____

_____

Part C

If there were no gaps or overlaps of the unit cubes in Kelly's drawing of a prism, what was the volume of the prism? Fill in the blank to complete the statement.

Answer   The volume of Kelly's prism was _____ cubic units.

Part D

If some of the unit cubes in Sue's drawing of a prism slightly overlapped, what could have been the volume of the prism? Explain your reasoning.

_____

_____

_____

_____

STOP

Name_____

Teacher_____ Grade_____

School_____ City_____ State_____

Assessment 2

1A. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
1B. Ⓐ Ⓑ Ⓒ Ⓓ

2A. Ⓐ Ⓑ Ⓒ Ⓓ
2B. Ⓐ Ⓑ Ⓒ Ⓓ

3. Ⓐ Ⓑ Ⓒ Ⓓ

4. See page 32.

5A. Ⓐ Ⓑ Ⓒ Ⓓ
5B. Ⓐ Ⓑ Ⓒ Ⓓ

6. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

7. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

8. See page 36.

9. See page 37.

10. Ⓐ Ⓑ Ⓒ Ⓓ

11. Ⓐ Ⓑ Ⓒ Ⓓ

12. See page 38.

13A. Ⓐ Ⓑ Ⓒ Ⓓ
13B. Ⓐ Ⓑ Ⓒ Ⓓ

14. Ⓐ Ⓑ Ⓒ Ⓓ

15. Ⓐ Ⓑ Ⓒ Ⓓ

16. See page 42.

17. Ⓐ Ⓑ Ⓒ Ⓓ

18. Ⓐ Ⓑ Ⓒ Ⓓ

19. See page 44.

20. See page 45.

21. Ⓐ Ⓑ Ⓒ Ⓓ

22. Ⓐ Ⓑ Ⓒ Ⓓ

23. Ⓐ Ⓑ Ⓒ Ⓓ

24. See page 48.

25. Ⓐ Ⓑ Ⓒ Ⓓ

26A. Ⓐ Ⓑ Ⓒ Ⓓ
26B. Ⓐ Ⓑ Ⓒ Ⓓ

27. Ⓐ Ⓑ Ⓒ Ⓓ

28. See page 50.

29A. Ⓐ Ⓑ Ⓒ Ⓓ
29B. Ⓐ Ⓑ Ⓒ Ⓓ

30. Ⓐ Ⓑ Ⓒ Ⓓ

31. Ⓐ Ⓑ Ⓒ Ⓓ

32. See page 54.

33. Ⓐ Ⓑ Ⓒ Ⓓ

34. Ⓐ Ⓑ Ⓒ Ⓓ

35. See page 57.

36. See page 58.

37. Ⓐ Ⓑ Ⓒ Ⓓ

38. See page 59.

39. Ⓐ Ⓑ Ⓒ Ⓓ

40. See page 60.

TEACHER USE ONLY

4. ⓪ ① ② ③
8. ⓪ ① ② ③
9. ⓪ ① ② ③
12. ⓪ ① ② ③
16. ⓪ ① ② ③ ④ ⑤ ⑥
19. ⓪ ①
20. ⓪ ① ② ③ ④
24. ⓪ ① ② ③
28. ⓪ ① ② ③
32. ⓪ ① ② ③ ④
35. ⓪ ① ② ③
36. ⓪ ① ② ③
38. ⓪ ①
40. ⓪ ① ② ③ ④

Cut along the dotted line.