## Session 1, Multiple-Choice Questions

1 Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

  A. 10:21 A.M.

  B. 10:24 A.M.

✔ C. 10:36 A.M.

  D. 10:48 A.M.

Reporting Category for Item 1: ***Patterns, Relations, and Algebra*** (p. 254)
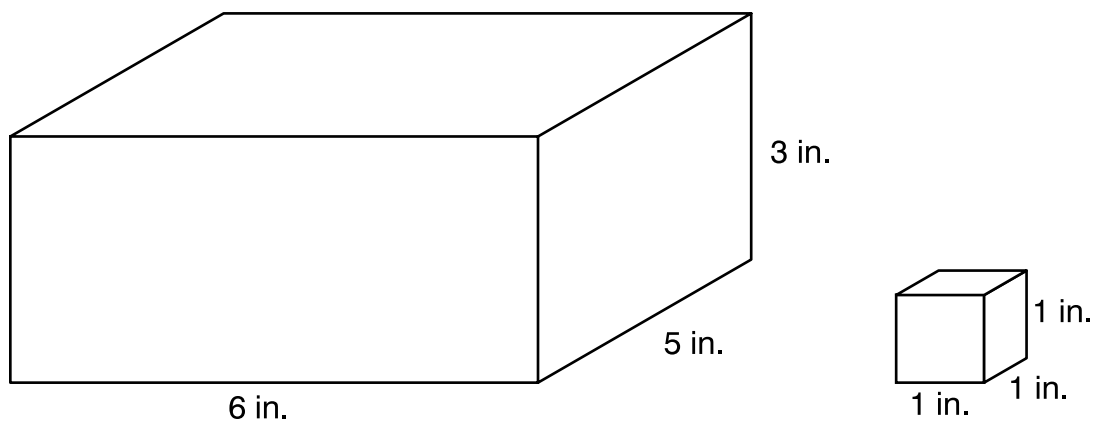
Use the triangles shown below to answer question 2.
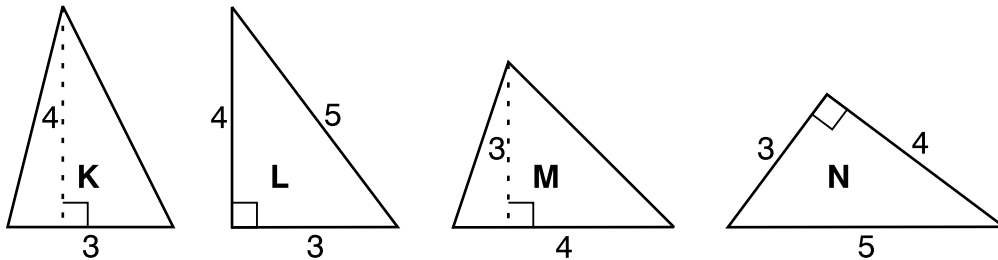
2 Which triangles are congruent?

  A. K and M only

✔ B. L and N only

  C. K, L, M, and N

  D. No two figures shown are congruent.

Reporting Category for Item 2: ***Geometry*** (p. 255)

Use the picture below to answer question 3.

3 in.

5 in.

6 in.

1 in.

1 in.

1 in.

3 How many 1-in. cubes will completely fill the carton shown?

A. 14

B. 33

✔ C. 90

D. 105

Reporting Category for Item 3: **Measurement (p. 255)**

4 Which has the greatest value: $\frac{1}{3}$, 30%, or 0.31?

✔ A. $\frac{1}{3}$

B. 30%

C. 0.31

D. They all have exactly the same value.

Reporting Category for Item 4: **Number Sense and Operations (p. 253)**

5 Carlos is planning a birthday party. He and his friends will have dinner at a restaurant and then do an activity afterwards. His choices are listed below.

Dinner: pizza, hamburgers, barbecue, or seafood

Activity: skating, amusement park, or movie

How many different combinations of dinner and activity are possible?

A. 7

B. 4

✔ C. 12

D. 24

Reporting Category for Item 5: ***Data Analysis, Statistics, and Probability*** **(p. 256)**

Session 1, Short-Answer Questions

6 What does *m* equal in this equation?

$$3m + 2 = 17$$

3*m* means 3 times *m*

> **Correct Answer:**
>
> 5 or $m = 5$

Reporting Category for Item 6: **Patterns, Relations and Algebra (p. 254)**

7 Write $2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5$ in exponential notation.

> **Correct Answer:**
>
> $2^3 \times 3^2 \times 5^2$

Reporting Category for Item 7: **Number Sense and Operations (p. 253)**

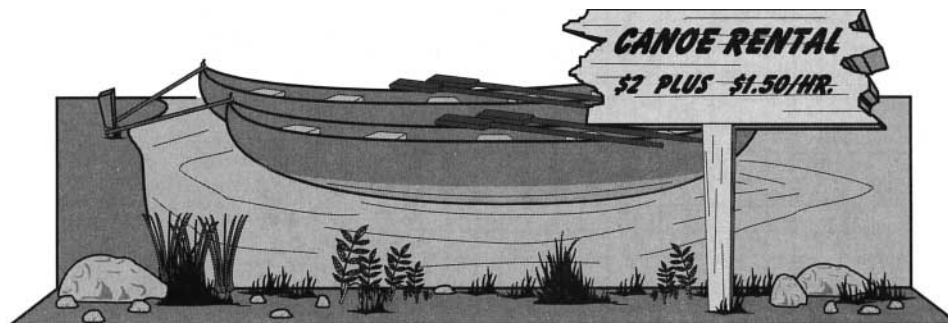**8** What is the greatest common factor of 12 and 28?

> **Correct Answer:**
>
> 4

Reporting Category for Item 8: **Number Sense and Operations (p. 253)**

Session 1, Open-Response Question

Use the picture below to answer question 9.

9 Marion wants to rent a canoe to go out on a lake. The cost is $2.00 plus $1.50 for each hour.

   a. Make a table showing how much it would cost to rent a canoe for 1, 2, 3, and 4 hours.

   b. Using numbers, symbols, and the variable *n*, write an expression for how much it would cost to rent the canoe for *n* hours.

   c. Marion has $14.00. What is the greatest number of hours she can rent the canoe? Show your work or explain how you found your answer.

Reporting Category for Item 9: ***Patterns, Relations, and Algebra*** **(p. 254)**

Session 1, Short Answer Questions

10 Compute:

$$\frac{11}{12} - \frac{3}{8}$$
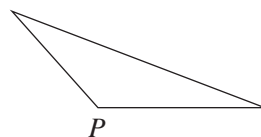
Correct Answer:

$\frac{13}{24}$

Reporting Category for Item 10: **Number Sense and Operations (p. 253)**

Use the ruler and protractor included in your reference sheet to answer question 11.

11 Draw a triangle with exactly one obtuse angle. Label the obtuse angle with the letter *P*.
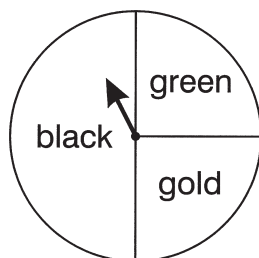
Correct Answer:
    Sample of Drawing

P

Answers will vary, provided that angle *P* is greater than 90º.

Reporting Category for Item 11: **Measurement (p. 255)**

Session 1, Open-Response Question

*Use the spinner shown below to answer question 12.*

12 Melinda and Henry are playing a game with this three-color spinner.

a. Henry thinks that the probability of landing on gold is $\frac{1}{3}$. Is Henry correct?

- If he is correct, explain how you know.

- If he is **not** correct, give the correct probability and explain how you know it is correct.

b. If Melinda and Henry will spin the spinner 60 times in the game, about how many times can they expect it to land on each of the three colors? Explain or show how you found your answer.

c. Melinda and Henry started playing the game, and after 30 spins the spinner had landed on black 10 times. Henry told Melinda that this shows that the probability of landing on black must be $\frac{10}{30} = \frac{1}{3}$. Is Henry correct?

- If he is correct, explain how you know.

- If he is **not** correct, tell what is the probability of landing on black. Explain how it is possible that the spinner could have landed on black 10 times out of a total of 30 spins.

Reporting Category for Item 12: ***Data Analysis, Statistics, and Probability*** (p. 256)

Session 2, Multiple-Choice Questions

Use the picture below to answer question 13.

Poster 1   Poster 2   Poster 3
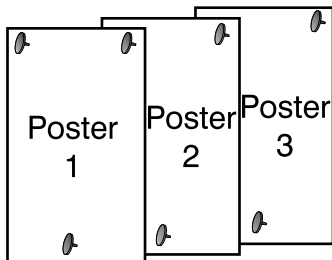
13 Ethan hung 12 posters in **one** row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

A. 13

✔ B. 25

C. 12

D. 24

Reporting Category for Item 13: ***Patterns, Relations, and Algebra*** (p. 254)
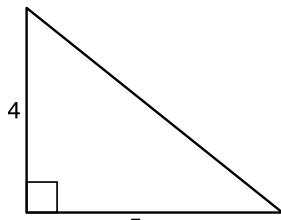
Use the figures below to answer question 14.

Figure 1
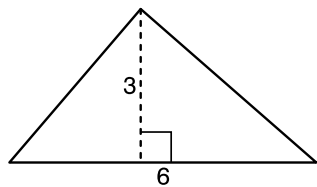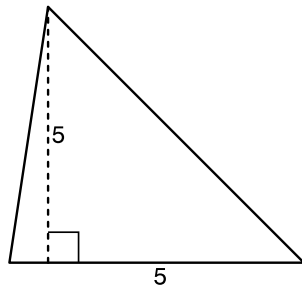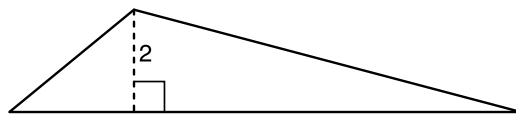

Figure 2

Figure 3

Figure 4

14 Which two figures have the same area?

✔ A. Figures 1 and 4

   B. Figures 1 and 2

   C. Figures 2 and 3

   D. Figures 2 and 4

Reporting Category for Item 14: **Measurement** (p. 255)

Use the coupon shown below to answer question 15.

¼ OFF COUPON

Take ¼ off the price of a combo meal!

(sandwich, large fries, large drink)

---

15 The regular price of a combo meal is $5.00. How much money is saved by using the coupon?

   A. $1.00

   B. $3.75

✔ C. $1.25

   D. $4.00

Reporting Category for Item 15: **Number Sense and Operations** (p. 253)

16 Jerrod has a bag with 14 green marbles, 8 white marbles, 4 red marbles, and 4 black marbles. If he wants the probability of picking a green marble to be $\frac{1}{2}$, which should Jerrod do?

✔ A. add two green marbles

   B. remove two white, two red, and two black marbles

   C. remove two green marbles

   D. add two white, two red, and two black marbles

Reporting Category for Item 16: **Data Analysis, Statistics, and Probability** (p. 256)

Use the figure shown below to answer question 17.
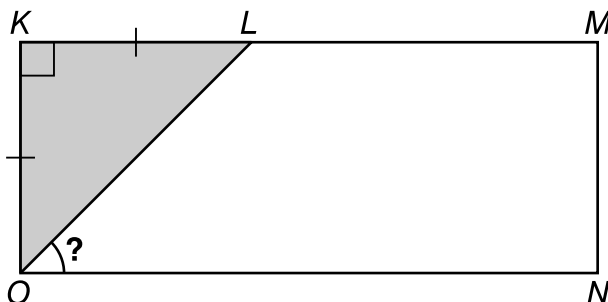
17 Polygon *KMNO* is a rectangle and the lengths of $\overline{KL}$ and $\overline{KO}$ are equal. What is the measure of angle *LON*?

A. 30°

✔ B. 45°

C. 90°

D. 135°

Reporting Category for Item 17: **Measurement (p. 255)**

Use the number pattern below to answer question 18.

1.9, 3.1, 4.3, 5.5, _____, _____, __?__, . . .

18 Which is the **seventh** number in this pattern?

A. 8.1

B. 7.9

C. 6.7

✔ D. 9.1

Reporting Category for Item 18: **Patterns, Relations, and Algebra (p. 254)**

19 Donna wants to use ready-made 6-foot long fence sections for her yard. The yard measures 24 feet long and 30 feet wide. How many **fence sections** would she need to enclose her entire yard?

A. 120

✔ B. 18

C. 108

D. 20

Reporting Category for Item 19: **Measurement (p. 255)**

20 The 23 members of the school jazz band are going to perform a concert. They will go to the concert in vans that will safely hold up to 6 students. How many vans will be needed to safely carry all of the students?

A. 3

B. 3.5

C. $3\frac{5}{6}$

✔ D. 4

Reporting Category for Item 20: **Number Sense and Operations (p. 253)**

21 If a whole number is divisible by 2, 3, 4, and 5, then it **must** be divisible by which number?

✔ A. 60

B. 8

C. 7

D. 14

Reporting Category for Item 21: **Number Sense and Operations (p. 253)**

22 Talia is thinking of a number. If she adds 6 to the number and divides the resulting number by 3, she will get 7. What is the original number?

✔ A. 15

B. 3

C. 10

D. 16

Reporting Category for Item 22: ***Patterns, Relations, and Algebra*** **(p. 254)**

Session 2, Open-Response Question

23 Daniel has invented a new game with its own money system. The money system has the following three coins:

⬜   △   ○

To challenge his friends to find the relationship among the values of the coins, he gave them the following three coins:

Clue 1: ⬜⬜⬜⬜ is the same as △⬜⬜ .

Clue 2: △△△△ is the same as ○⬜⬜ .

a. Use Clue 1 to find how many rectangles are worth the same as 1 triangle. Use words or pictures to explain your reasoning.

b. Use Clues 1 and 2 to find how many triangles are worth the same as 1 circle. Use words or pictures to explain your reasoning.

c. If 1 rectangle is worth 15 cents in U.S. money, what is the value in U.S. money of the other two coins? Explain how you found your answer.
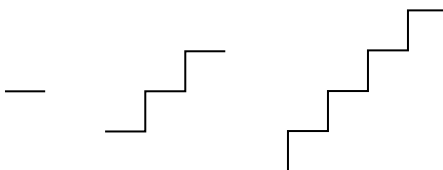
Reporting Category for Item 23: ***Patterns, Relations, and Algebra*** **(p. 254)**

Session 3, Multiple-Choice Questions

Use the pattern below to answer question 24.

24 How many line segments are needed to make the **fourth** figure in the pattern?

   A. 11
✔ B. 13
   C. 15
   D. 17

Reporting Category for Item 24: ***Patterns, Relations, and Algebra*** (p. 254)

25 Ramona wants to take piano lessons. There are five piano teachers in her neighborhood. The prices the teachers charge for a half-hour lesson are: $8, $12, $12, $15, and $18. What is the **mean** price for a half-hour lesson?

   A. $8
   B. $10
   C. $12
✔ D. $13

*Reporting Category* for Item 25: ***Data Analysis, Statistics, and Probability*** (p. 256)

26 A light year is approximately 6×10^{12} miles. What is another way to write this number?

✔ A. 6,000,000,000,000
   B. 6,000,000,000
   C. 600,000,000,000
   D. 60,000,000,000,000

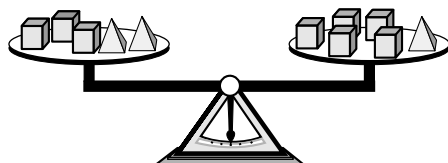*Reporting Category* for Item 26: ***Number Sense and Operations*** (p. 253)

27 Which shows the translation of pentagon *ABCDE* two units to the left?

A.

B.

C.

✔ D.
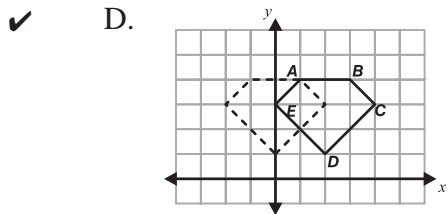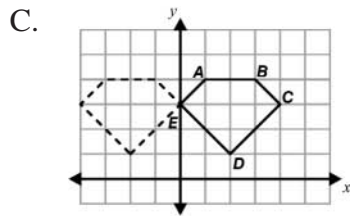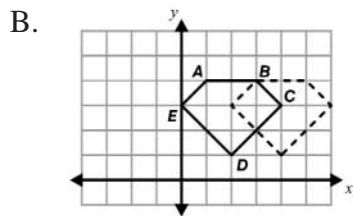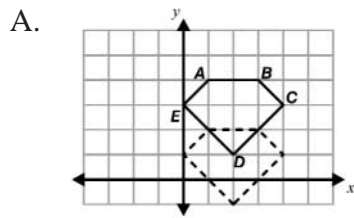
Reporting Category for Item 27: **Geometry** (p. 255)

Use the picture of the balance scale below to answer question 28.

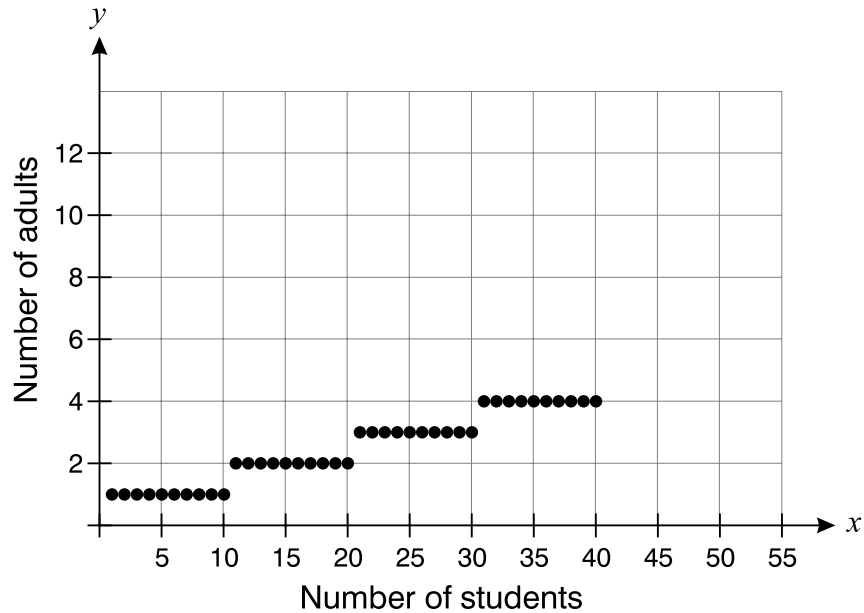**28** Which sentence is true based on the balance shown by the scale?

   A. The weight of △ is the same as the weight of ▢▢▢.

   B. The weight of △△ is the same as the weight of ▢.

   C. The weight of △△△ is the same as the weight of ▢.

✔   D. The weight of △ is the same as the weight of ▢▢.

Reporting Category for Item 28: ***Patterns, Relations, and Algebra*** (p. 254)

Use the graph below to answer question 29.

29 The graph shows how many adults are needed to go on a field trip, based on the number of students going. If the relationship shown by the graph continues, how many adults are needed if 52 students are going on a field trip?

✔ A. 6

  B. 7

  C. 8

  D. 5

Reporting Category for Item 29: ***Patterns, Relations, and Algebra*** **(p. 254)**

Use the figure below to answer question 30.
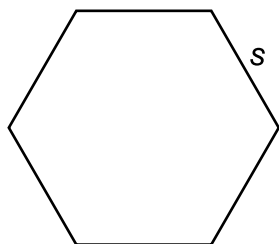
30 All of the sides of this hexagon have the same length, *s*. Which expression represents the perimeter of this hexagon?

   A. $s + 6$

✔   B. $s \times 6$

   C. $s \div 6$

   D. s^6

Reporting Category for Item 30: ***Measurement*** **(p. 255)**

31 A garden snail can travel about 5 feet in 2 minutes. At this speed, how far can it travel in one **hour**?

   A. 30 feet

   B. 25 feet

   C. 15 feet

✔   D. 150 feet

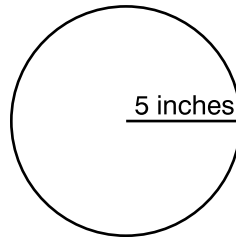*Reporting Category* for Item 31: ***Measurement*** **(p. 255)**

32 Which can be used to find the missing number in the number sentence below?

$3 \times \square = 39$

    A. $3 \div 39$

    B. 3×39

✔   C. $39 \div 3$

    D. $39 - 3$

Reporting Category for Item 32: **Patterns, Relations, and Algebra** (p. 254)

Use the picture below to answer question 33.

5 inches

33 A circle has a radius of 5 inches. Which is the best estimate of its circumference?

    A. 15 inches

✔   B. 30 inches

    C. $7\frac{1}{2}$ inches

    D. 75 inches

Reporting Category for Item 33: **Measurement** (p. 255)

34 This is how the 6th graders at Washington Middle School spent their recess time one day:
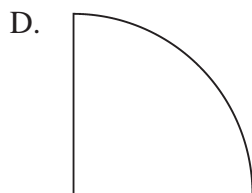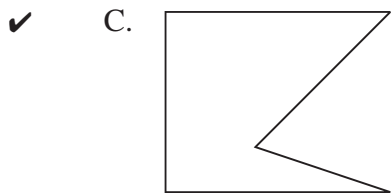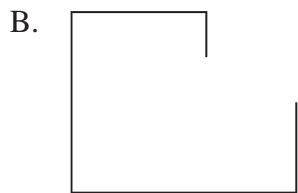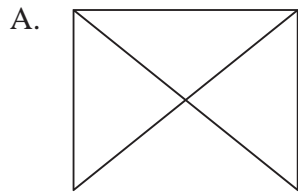
- 24 played football
- 10 played basketball
- 14 talked to friends

Which shows a ratio of 5 to 7?

A. talked to friends: played basketball

✔ B. played basketball: talked to friends

C. played basketball: played football

D. talked to friends: played football

Reporting Category for Item 34: ***Number Sense and Operations*** (p. 253)

35 Which figure is a polygon?

A.

B.

✔ C.

D.

Use the label below to answer question 36.

Nutrition Facts

Serv. Size: 1 package
Servings per container: 1

Amount/Serving % DV* Amount/Serving % DV*

Total Calories...............................150

Calories from Fat....................................90

Vitamin A 0% • Vitamin C 0% • Calcium 2% • Iron 4%

*Percent Daily Values (DV) are
based on a 2,000 calorie diet.*

36 What percent of the total calories comes from fat?

A. 75%

B. 6%

C. 55%

✔ D. 60%

Reporting Category for Item 36: ***Number Sense and Operations*** (p. 253)

37 Jamey estimates that there are 9 minutes of commercials for every 60 minutes of television that he watches. Based on his estimate, how many minutes **without** commercials would there be in two hours?

A. 120 minutes

B. 138 minutes

✔ C. 102 minutes

D. 110 minutes

Reporting Category for Item 37: ***Number Sense and Operations*** (p. 253)

Session 3, Open-Response Questions

Use the ruler and protractor included in your reference sheet and the table below to answer question 38.

A **right** triangle has one right angle.

An **isosceles** triangle has at least 2 congruent sides.

An **acute** triangle contains three acute angles.

An **obtuse** triangle contains one obtuse angle.

38   a. Is it possible to draw a right triangle that is isosceles?

- If it is possible, draw such a triangle. Label the parts of the triangle that make it right and isosceles.

- If it is not possible, explain why it is not possible.

b. Is it possible to draw an acute triangle that is isosceles?

- If it is possible, draw such a triangle. Label the parts of the triangle that make it acute and isosceles.

- If it is not possible, explain why it is not possible.

c. Is it possible to draw a right triangle that is obtuse?

- If it is possible, draw such a triangle. Label the parts of the triangle that make it right and obtuse.

- If it is not possible, explain why it is not possible.

Reporting Category for Item 38: **Geometry** (p. 255)

39 Jade was invited to participate in a quiz show that has two parts. There are 20 questions in each part.

- In the first part of the quiz show the contestant wins $50 for each correct answer.

- In the second part of the quiz show the contestant wins $100 for each correct answer.

a. Jade got $\frac{7}{10}$ of the 20 questions correct in the first part. How much money did she win? Show or explain how you found your answer.

b. Jade got 40% of the 20 questions correct in the second part. How much money did she win? Show or explain how you found your answer.

c. What part of the total possible money did Jade win? Show your answer in **two** of these three ways: as a fraction, as a decimal, or as a percent.

Reporting Category for Item 39: ***Number Sense and Operations*** (p. 253)