



NSCAS Growth Grade 6
Item Type Sampler
English Language Arts and Mathematics

Student's Name:



Grade 6
Item Type Sampler
English Language Arts

Directions:

On the following pages of your booklet are passages and questions for the Grade 6 *Nebraska Student-Centered Assessment System (NSCAS) Growth English Language Arts* Item Type Sampler.

Read these directions carefully before beginning this item type sampler.

This item type sampler will include several different types of questions. Some questions are based on a passage. Multiple Choice questions will ask you to select an answer from among four choices. Multiple Select questions will ask you to select multiple correct answers from among five or more answer choices. For some questions, there may be two parts, Part A and Part B, where each part has a Multiple Choice or Multiple Select question. Some questions will ask you to construct an answer by following the directions given. These questions will be found in your booklet.

For all questions:

- Read each question carefully and choose the best answer.
- You may use scratch paper to make notes.
- Be sure to answer ALL the questions.

When you come to the word STOP, you have finished the Grade 6 NSCAS Growth English Language Arts Item Type Sampler. You may review to check your answers. Make sure you have marked all of your answers clearly and that you have completely erased any marks you do not want. When you are finished, close your booklet.

The item on this page is not passage-based.

★ 1. Read this paragraph about a class field trip.

[1] Our class is going on a field trip next week to Chimney Rock, which is located a few hours from our middle school. [2] I have seen pictures of it; this tall chimney-shaped landmark is something I have wanted to see for a long time. [3] It rises almost 300 feet above the North Platte Valley. [4] During the 1800s, it was a landmark along the Oregon Trail and the California Trail and the Mormon Trail. [5] It has had several names like Chimley Rock and Elk’s Peak before being named Chimney Rock. [6] The Lakota Sioux, a Native American tribe, knew of this landmark well before pioneers came to Nebraska. [7] There is the Ethel and Christopher J. Abbot Visitor Center and museum, as well as a gift shop with exhibits and a video about the westward migration of pioneers. [8] The 2006 Nebraska state quarter shows a covered wagon heading west with Chimney Rock in the background.

Which sentence gives the BEST way to revise sentence 7?

- A. There is the Ethel and Christopher J. Abbot Visitor Center and gift shop, as well as a museum with exhibits and a video about the westward migration of pioneers.
- B. There is the Ethel and Christopher J. Abbot Visitor Center, as well as a museum and a gift shop with exhibits and a video about the westward migration of pioneers.
- C. There is the Ethel and Christopher J. Abbot Visitor Center museum and gift shop, as well as exhibits and a video about the westward migration of pioneers.
- D. There is the Ethel and Christopher J. Abbot Visitor Center, museum, and gift shop with exhibits and a video about the westward migration of pioneers.

The item on this page is not passage-based.

- ★ 2. A student has found a source for a research report about Abraham Lincoln. Read the paragraphs.

The Lincolns were forced to move from Abraham’s birthplace of Kentucky to Perry County, Indiana, due to a land dispute in 1817. There, the family lived on public land in a modest shelter, hunting game and farming a small plot. Abraham’s father, Thomas, was eventually able to buy the land.

Thomas’ new wife, Sarah, encouraged Abraham to read. It was while growing into manhood that Abraham Lincoln received his formal education—an estimated total of 18 months—a few days or weeks at a time. Reading material was in short supply in the Indiana wilderness. Neighbors recalled how Abraham would walk for miles to borrow a book. He probably read popular books at that time, such as *Robinson Crusoe*, *The Pilgrim’s Progress*, and *Aesop’s Fables*.

Which of the following statements avoids plagiarizing the source?

- A. Books were in short supply in the Indiana wilderness.
- B. Neighbors recalled that Abraham was a very determined reader.
- C. In Indiana, the family stayed on public land in a shelter that was modest.
- D. While growing into manhood, Abraham received an estimated 18 months of formal education.

The items on this page are not passage-based.

- ★ 3. A student is writing a report about improvements in modern communication. Read the paragraph from her report.

[1] Throughout history, human communication has changed dramatically. [2] Early societies were limited by distance, but modern communication has improved through a variety of devices. [3] Inventions such as telegraphs, telephones, satellites, radios, and computers have improved the capabilities of long-distance communication. [4] The earliest mobile phones allowed users to communicate over radio frequencies, while modern mobile phones rely on cellular networks. [5] In 1983, the first commercially available handheld mobile phone was released. [6] The early 1990s saw the birth of text messaging services; users were able to instantly share short messages over long distances.

Which sentence from the paragraph BEST supports the topic?

- A. Sentence 1
- B. Sentence 3
- C. Sentence 5
- D. Sentence 6

- ★ 4. Read the paragraph from a student's short story.

Troy opened the door to find the **source** of the scratching. He was startled to see Sherman **covered in mud** from head to tail. Troy brought Sherman back inside and then **looked at** the backyard. The gate was locked and Troy saw no **evidence** of digging under the fence. He didn't see mud puddles on the ground either. *Now that's unexpected*, Troy thought, before scanning the yard once more, shrugging, and then going back inside.

Which replacement of a word or phrase in bold would improve the paragraph?

- A. replacing **evidence** with **sign**
- B. replacing **source** with **beginning**
- C. replacing **covered in mud** with **filthy**
- D. replacing **looked at** with **investigated**

Lighting Up the Night

- 1 On a warm summer evening in the American Midwest, it's not unusual to see hundreds of tiny lights flickering over a grassy field. These lights are not from mini flashlights or from tiny fairy lanterns. Rather, they are from small insects called fireflies, which are also known as lightning bugs. They have the **unique** ability to light up their bodies in a soft yellow glow. This ability is called bioluminescence. The prefix "bio" means "life" and "luminescence" means "the emission of light." So, "bioluminescence" means "life forms that can make their own light."

Lighting Up the Land

- 2 Fireflies are not the only land animals that have this capability. The glittering glowworms of New Zealand can also light up the night. They are usually found on the walls of dark, damp caves and glow a soft aqua blue. A snail that lives in Southeast Asia can set its body aglow, too, but only when it is young. Once it becomes an adult, it can no longer produce its own light. Many types of worms, cockroaches, beetles, and millipedes around the world also can glow. Plants also get into the night light action. Scientists have discovered at least 50 different types of mushrooms in places across Australia and North America that can glow in the dark.

Lighting Up the Sea

- 3 Even though many land animals can create their own light, the largest number of bioluminescent life forms is found in Earth's oceans. There are so many, in fact, that it is estimated that more than 78 percent of the organisms in the ocean can make their own light.
- 4 Most people assume the bioluminescent animals in the ocean only live down deep on the ocean floor, but that is not the case. Bioluminescent ocean animals can be found at many different depths of the ocean, from the ocean's surface all the way down to the seafloor.
- 5 Glowing sea life ranges from the tiny to the huge. Some of the tiny bioluminescent organisms include bacteria, algae, and shrimp. Some of the larger organisms include fish, jellyfish, squid, octopuses, and sharks.
- 6 Bioluminescent sea life mainly glows in some shade of blue or green. These two colors have shorter wavelengths, so they can travel more easily through a water environment. However, a few sea organisms can glow with a bright red light.

Sparkling the Light

- 7 How exactly do bioluminescent organisms light up? They do so through a chemical reaction. All bioluminescent organisms have special molecules in their bodies called luciferin and luciferase. The luciferase provides a pathway for luciferin to combine with oxygen. When they combine, a chemical reaction takes place and a brilliant flash of light is released.

- 8 In bioluminescent organisms, this reaction takes place repeatedly. Essentially, every time you see a bioluminescent organism light up, luciferin and oxygen have just combined. What is interesting about this light is that it does not produce much heat. So, if you were to hold a firefly in your hand, the insect would stay the same temperature even when it is glowing.

Reasons for the Light

- 9 Bioluminescent organisms light up for many reasons. One is for protection. Some sea animals will send off a blinding series of lights if they are being attacked. This will frighten away the predator or attract larger predators to attack the attacker! The Atolla jellyfish is one animal that uses its light for protection. When it lights up, its flashing fireworks display can be seen for about 300 feet.
- 10 Another reason for lighting up the night is to find food. Some fish have a structure that dangles in front of their mouths and can light up. When other animals swim up to eat the glow-in-the-dark lure, the fish snaps its jaws and has its dinner.
- 11 Some animals use bioluminescence to attract mates. This is the **primary** reason that fireflies light up their bodies. And in the deep ocean, octopuses light up the area around their mouths to attract mates, too.
- 12 **Camouflage** is another reason animals use bioluminescence. There is a certain type of squid, for example, that has lights on the underside of its body. These lights are the same color as the lights that come down from the ocean's surface. When an animal looks up toward the squid, the squid's lights will blend in with the lights from above. Therefore, the squid will become invisible.

Helping Humans

- 13 When scientists study bioluminescent animals, they use their knowledge in many ways. One is to understand more about our planet and the living things that dwell on it. Another is to figure out how to use the principles found in nature to make things that could benefit humans.
- 14 The principle of bioluminescence can help humans in many ways. One is by trying to reduce energy costs. Bioluminescent organisms are very efficient, for example. The chemical reaction that takes place does not produce much heat. Most of the energy released is used to make light. In contrast, light bulbs only produce a small amount of light in comparison to how much heat they give off. If scientists can figure out how bioluminescent organisms make light without releasing much heat, this could help make our use of electricity to produce light that much more efficient.
- 15 Another way that bioluminescence helps humans is by making things invisible in the water. Military ships can use this principle to make their vessels invisible to deep-sea vehicles, such as submarines, just like squid do in the water.

- 16** Some scientists even use the principles of bioluminescence to study cells in the human body and diagnose diseases. This can help make people healthier and save lives.

Appreciating Nature

- 17** The next time you see a firefly flitting across the sky, think about the rest of the organisms around the world that can light up. Who knows, maybe one day, you will be a scientist that studies bioluminescence in organisms around the world!

5. **Read the sentence from paragraph 1.**

“They have the **unique** ability to light up their bodies in a soft yellow glow.”

As used in the sentence, what is a synonym for **unique**?

- A. mechanical
- B. mysterious
- C. universal
- D. unusual

6. **Read the sentence from paragraph 1.**

“These lights are not from mini flashlights or from **tiny fairy lanterns**.”

Why does the author mention “tiny fairy lanterns”?

- A. to create a simile that makes the reader picture the fireflies
- B. to draw an analogy that creates a sense of wonder in the reader
- C. to introduce hyperbole to cause the reader to doubt the author’s intent
- D. to use a metaphor that compares the lights to something the reader understands

7. According to the passage, how might bioluminescence help humans in the future?

- A. by reducing energy costs
- B. by making things more visible outdoors
- C. by providing an inexpensive source of heat
- D. by enabling scientists to discover more glowing fish

8. **This question has two parts. Answer Part A, and then answer Part B.**

Part A

What is MOST LIKELY the meaning of **camouflage** in paragraph 12?

- A. flashing
- B. floating
- C. glowing
- D. hiding

Part B

Which phrase from paragraph 12 BEST helps the reader understand what **camouflage** means?

- A. a certain type
- B. on the underside
- C. looks up toward
- D. blend in with

9. According to the passage, where is the largest number of bioluminescent life forms found?
- A. in fields
 - B. in caves
 - C. in the sky
 - D. in the ocean
10. What is the author's purpose in this passage?
- A. to warn readers about the heat produced by bioluminescence
 - B. to entertain readers with stories about unusual plants and animals
 - C. to inform readers about plants and animals that are bioluminescent
 - D. to persuade readers to study how to make plants and animals produce energy
11. What are the ways in which animals use bioluminescence? Select **all** that apply.
- A. to attract mates
 - B. to warm themselves
 - C. to heal from diseases
 - D. to protect themselves
 - E. to see better in dark places

12. This question has two parts. Answer Part A, and then answer Part B.

Part A

Under which heading is the MOST information about how bioluminescent organisms produce light?

- A. **Lighting Up the Land**
- B. **Lighting Up the Sea**
- C. **Sparking the Light**
- D. **Reasons for the Light**

Part B

Which phrase from the passage BEST describes how bioluminescent organisms produce light?

- A. organisms light up
- B. a chemical reaction
- C. special molecules
- D. same temperature

13. As used in paragraph 11, which word is a synonym of **primary**?

- A. main
- B. obvious
- C. only
- D. simple

Building Bridges

- 1 Etta bounced on the balls of her feet as she glanced at the back of her classroom, where a folding table held boxes of wooden craft sticks and bottles of white glue. Her industrial technology class was having a competition to see who could construct the strongest and most unique bridge. Interested students were allowed to stay after school to begin their projects.
- 2 When the final bell sounded, Etta dashed toward the supply table and claimed a box of sticks and a bottle of glue as her friends Kayla and Marcus joined her.
- 3 “Ms. Lee says we’re allowed to work together,” Marcus noted.
- 4 “Would you like to be on our team, Etta?” Kayla asked.
- 5 Etta politely refused without even considering their offer. Already, an infinite number of ideas exploded in her imagination like sizzling firecrackers, each new design concept more enchanting than the last. Etta did not want to share her potential victory with anyone else.
- 6 Kayla and Marcus wished Etta good luck as they sat down at the table across from her. Ignoring their dull conversation about squares and triangles, Etta launched into action. First, she glued together a graceful curve of sticks. Next, she fashioned a bridge in the shape of a cat’s body with thin wooden legs. Pausing, she inspected her progress with satisfaction.
- 7 Across the table, Kayla studied Etta’s creation with a wrinkled forehead. “Your cat bridge doesn’t have balanced proportions,” Kayla warned. “It won’t be stable. You should fasten more sticks to the curved tail section.”
- 8 “You should make the cat’s legs triangles,” Marcus added. “They’re the strongest shape because the force of the weight is spread through the three sides.”
- 9 Etta pressed her lips into a firm line. Her cat’s legs would look ridiculous with triangles inside them. “I’ll figure out my own design,” she insisted.
- 10 Before long, it was time to go home. As Etta left, she surveyed her classmates’ projects, noticing only her bridge had an unusual shape. Everyone else had used unattractive, though more traditional, designs. She chuckled at the sight of one bridge that had giant paper clips holding its joints together.
- 11 Ms. Lee noticed Etta’s reaction. “The paper clips work like clamps to help the bridge’s joints dry securely,” Ms. Lee explained, giving Etta a pointed look. “Learning about others’ ideas can be helpful.”
- 12 Uneasily, Etta remembered how she had swept aside her friends’ advice like dust on a tabletop, and now she felt uncertain about her design as she regarded everyone’s sturdy projects. Although she did not want to ruin her design, maybe she could add a few more sticks to her cat’s delicate tail tomorrow.

- 13 Two days later, it was time to test the bridges. After lunch, Ms. Lee placed two chairs in the front of the room and positioned the first bridge across the gap between the chairs. Then, she slowly added weights to the bridge.
- 14 Some bridges held twenty pounds before they toppled. However, Kayla and Marcus’s marvel set the class record. Its triangle beams and thick decking looked ordinary, but the bridge supported ninety pounds! As the class cheered, Etta blinked in surprise. Ninety pounds was more than Etta herself weighed!
- 15 Finally, the time to test Etta’s model arrived. Etta held her breath as Ms. Lee positioned the cat bridge on the chairs and gently placed a one-pound weight on its back. Snap! Crack! Instantly, Etta’s bridge collapsed, the cat’s body shattering and the tail and legs **splintering**.
- 16 Ms. Lee patted Etta’s slumped shoulder, saying, “Your bridge was very original, but its animal form didn’t function well.”
- 17 Etta realized her friends had been right when they offered advice on her design. Instead of listening, she had locked the door of her mind, denying entry to all their suggestions. After class, she stopped Kayla and Marcus.
- 18 “Congratulations,” Etta said. “Your bridge was amazing.”
- 19 Kayla thanked her, and Marcus added, “I’m sorry your bridge didn’t work well.”
- 20 “Maybe . . . you two could help me build another bridge,” Etta suggested. “I really would like to learn more about designing them.”
- 21 Kayla grinned in response. “Sure, we’ll share our building secrets,” she offered.
- 22 “The first one is no animal shapes,” Marcus teased.
- 23 Etta laughed. “I can see that now, but why not?”
- 24 “It has to do with uniform construction,” Kayla began, explaining how consistent shapes such as triangles and squares provided the most stability.
- 25 This time, instead of ignoring her friends, Etta listened closely.

14. What does the word **splintering** mean in paragraph 15?
- A. combining
 - B. dissolving
 - C. fracturing
 - D. mending
15. In paragraph 17, what does the author mean by the statement “she had locked the door of her mind”?
- A. She avoided facing her fears.
 - B. She refused to listen to advice.
 - C. She did not enjoy working in a group.
 - D. She believed the others were shutting her out.
16. **Read the sentence from paragraph 5.**
- “Already, an infinite number of ideas exploded in her imagination like sizzling firecrackers, each new design concept more enchanting than the last.”
- For which purposes does the author use figurative language in this sentence? Select **all** that apply.
- A. to create vivid imagery
 - B. to compare design ideas
 - C. to provide literal meanings
 - D. to describe the event clearly
 - E. to teach about firecrackers

17. **This question has two parts. Answer Part A, and then answer Part B.**

Part A

Based on paragraphs 1–6 , how does the author develop Etta’s character in the first part of the story?

- A. by describing her as confused
- B. by portraying her as confident
- C. by showing she is uncooperative
- D. by explaining how she hates being defeated

Part B

Which detail supports the answer to Part A?

- A. Etta bounced on the balls of her feet as she glanced at the back of her classroom. . . .
- B. Interested students were allowed to stay after school. . . .
- C. First, she glued together a graceful curve of sticks.
- D. Pausing, she accepted her progress with satisfaction.

18. This question has two parts. Answer Part A, and then answer Part B.

Part A

What change in Etta was a result of the outcome of the competition?

- A. She became humble.
- B. She became offended.
- C. She became impulsive.
- D. She became dependable.

Part B

Which details from the story support the answer to Part A? Select **all** that apply.

- A. Etta held her breath as Ms. Lee positioned the cat bridge on the chairs. . . .
 - B. Ms. Lee patted Etta’s slumped shoulder. . . .
 - C. Etta realized her friends had been right when they offered advice on her design.
 - D. “Maybe . . . you two could help me build another bridge,” Etta suggested.
 - E. “The first one is no animal shapes,” Marcus teased.
19. Which of Etta’s character traits contribute to the conflict of the story? Select **all** that apply.
- A. creative
 - B. curious
 - C. friendly
 - D. skillful
 - E. stubborn

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20. Which words describe character traits demonstrated by Kayla, Marcus, or Ms. Lee? Select **all** that apply.

- A. forgiving
- B. generous
- C. irritated
- D. opinionated
- E. superior



**THIS IS THE END
OF THIS CONTENT SECTION**

**Please wait for your Proctor to instruct you to
move on to the next content section of the sampler.**



Grade 6
Item Type Sampler
Mathematics

Directions:

On the following pages of your booklet are questions for the Grade 6 *Nebraska Student-Centered Assessment System (NSCAS) Growth Mathematics* Item Type Sampler.

Read these directions carefully before beginning this item type sampler.

This item type sampler will include several different types of questions. Multiple Choice questions will ask you to select an answer from among four choices. Multiple Select questions will ask you to select multiple correct answers from among five or more answer choices. For some questions, there may be two parts, Part A and Part B, where each part has a Multiple Choice or Multiple Select question. These questions will be found in your item type sampler.

For all questions:

- Read each question carefully and choose the best answer.
- You may use scratch paper to solve the problems.
- The Mathematics Reference Sheet is provided in the back of the Mathematics section. You may refer to this page at any time during the sampler.
- You may use a calculator ONLY for questions 1–8. You may NOT use a calculator for any other questions on this sampler.
- Be sure to answer ALL the questions.

When you come to the word STOP at the end of Part 1, you have finished Part 1 of the Grade 6 NSCAS Growth Mathematics Item Type Sampler. You may review ONLY Part 1 to check your answers. Make sure you have marked ALL of your answers clearly and that you have completely erased any marks you do not want. Your calculator must be collected before you can continue with Part 2. When your calculator has been collected, and your proctor has given you permission, you may move on to Part 2.

When you are finished with Part 2, you may review ONLY Part 2 to check your answers. Make sure you have marked ALL of your answers clearly and that you have completely erased any marks you do not want. When you are finished, close your booklet.

1. When $n = 11$, what is the value of $10 - (n + 6)$?

A. -7

B. 5

C. 7

D. 27

2. Which value of r makes the equation $115 = 5r$ true?

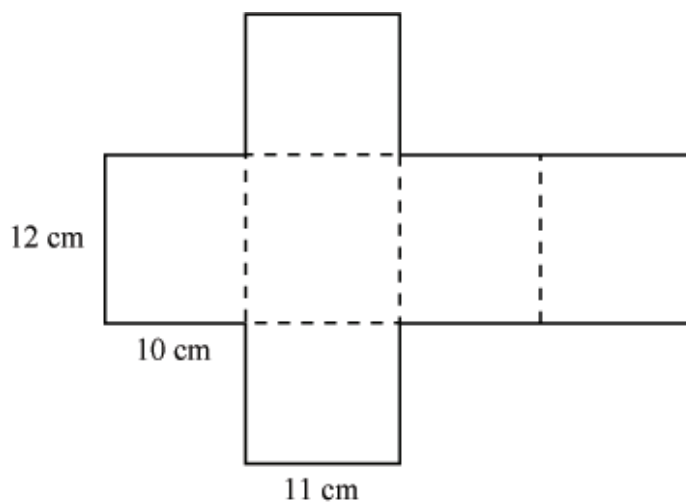
A. $r = 23$

B. $r = 28$

C. $r = 110$

D. $r = 115$

3. Use the net to answer the questions.



Part A

What are the different areas of the faces of the figure formed by the net? Select **all** that apply.

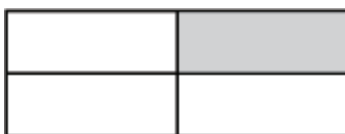
- A. 100 square centimeters
- B. 110 square centimeters
- C. 120 square centimeters
- D. 121 square centimeters
- E. 132 square centimeters
- F. 144 square centimeters

Part B

What is the surface area of the figure formed by the net?

- A. 362 square centimeters
- B. 720 square centimeters
- C. 724 square centimeters
- D. 1,320 square centimeters

4. Use the picture below to answer the question.



Which option lists the fraction, decimal, and percent that represent the shaded part?

- A. $\frac{1}{4}$, 0.20, 20%
 - B. $\frac{1}{4}$, 0.25, 25%
 - C. $\frac{1}{4}$, 0.4, 40%
 - D. $\frac{1}{4}$, 0.75, 75%
5. Use the table below to answer the question.

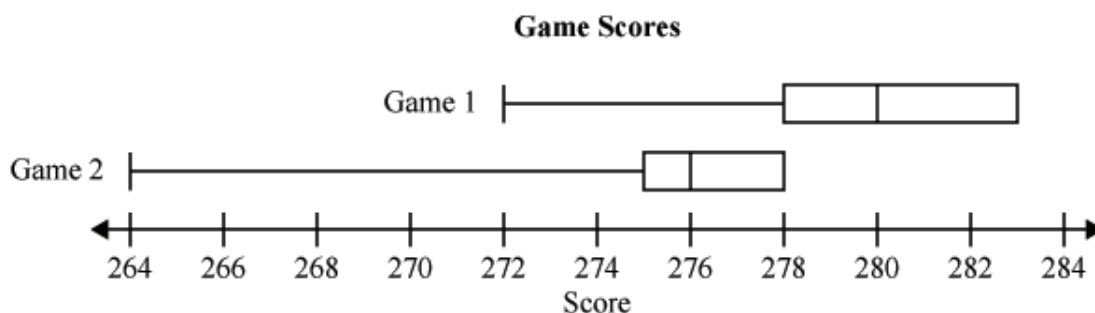
Sale Items

T-shirts	Price
Science Club	\$15.00
Student Council	\$13.00
Reading Classic	\$9.00
Math Club	\$15.00

What is the mean price of the T-shirts?

- A. \$12.00
- B. \$13.00
- C. \$14.00
- D. \$15.00

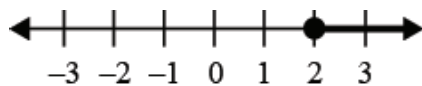
6. A salad dressing is made by combining 2 parts vinegar with 5 parts oil. How many ounces of oil should be mixed with 9 ounces of vinegar?
- A. 2 ounces of oil
- B. 3.6 ounces of oil
- C. 22.5 ounces of oil
- D. 63 ounces of oil
7. The box plots represent the scores earned by 20 students in the computer club in two different online games.



Which conclusions can be made about the data in the box plots? Select **all** that apply.

- A. The highest score in Game 2 was 278.
- B. In Game 1, 50% of the scores were between 278 and 280.
- C. In Game 2, 25% of the scores were between 276 and 278.
- D. The difference in the median scores for the two games is 4.
- E. The difference in the maximum scores for the two games is 5.
- F. The students' scores were greater in Game 2 than in Game 1.

8. Use the number line to answer the question.



Which inequalities represent the solution shown on the number line. Select **all** that apply.

- A. $-4x \leq -8$
- B. $-x \geq -2$
- C. $x - 1 \geq 1$
- D. $x + 1 \leq 3$
- E. $5x \geq 10$
- F. $6x \geq 8$



**THIS IS THE END OF THE
CALCULATOR SECTION OF THE SAMPLER**

You may NOT use a calculator for any other questions on this sampler.

Raise your hand and notify your Test Administrator or Proctor that you are ready to turn in your calculator.

Once your Proctor has collected your calculator and given you permission, you may go on to the non-calculator section of the sampler.



9. What is $\left|-\frac{2}{3}\right|$?

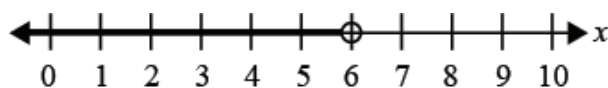
A. $\frac{3}{2}$

B. $-\frac{3}{2}$

C. $\frac{2}{3}$

D. $-\frac{2}{3}$

10. Use the graph below to answer the question.



Which inequality is represented by the graph?

A. $x < 6$

B. $x > 6$

C. $x < 0$

D. $x > 0$

11. Use the figure to answer the question.

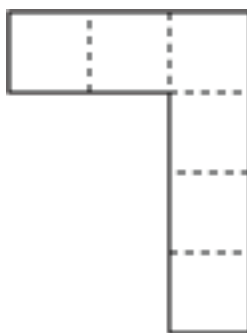


Which net could be used to form the figure?

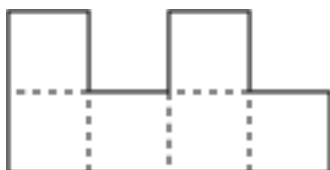
A.



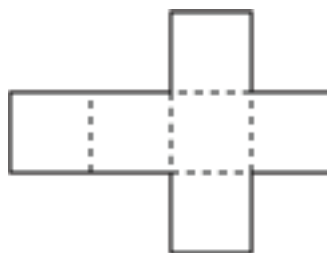
B.



C.



D.



12. Which algebraic expression represents four times the quantity 22 less than x ?
- A. $4(x - 22)$
 - B. $(4 \cdot 22) - x$
 - C. $4(22 - x)$
 - D. $(x \cdot 4) - 22$
13. Which expression is the prime factorization of 100?
- A. $2^2 \cdot 5^2$
 - B. $2^2 \cdot 25$
 - C. $4 \cdot 5^2$
 - D. $4 \cdot 25$
14. A group of students makes a map of the area around their school. They place the school at $(0, 0)$. The nearest store is placed at the point $(-5, 7)$. In which quadrant is the point representing the nearest store?
- A. Quadrant I
 - B. Quadrant II
 - C. Quadrant III
 - D. Quadrant IV

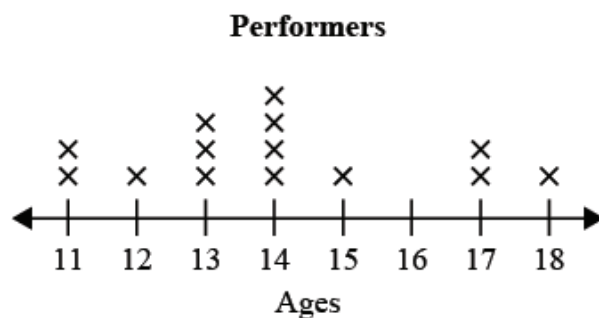
15. What is the value of y in the equation $\frac{y}{4} = 8$?

- A. 2
- B. 4
- C. 12
- D. 32

16. Which situation is BEST modeled by -15 ?

- A. growing 15 millimeters
- B. going 15 feet below sea level
- C. depositing \$15 into a savings account
- D. moving 15 steps forward

17. Use the line plot below to answer the question.



The line plot shows the ages of the performers in a play. How many performers are older than 13?

- A. 4 performers
 - B. 8 performers
 - C. 11 performers
 - D. 14 performers
18. Owen has $1\frac{1}{2}$ gallons of fruit punch. He pours the punch into glasses that hold $\frac{1}{16}$ gallon. How many glasses can Owen fill with fruit punch?
- A. 11 glasses
 - B. 24 glasses
 - C. 32 glasses
 - D. 48 glasses

19. What is the quotient?

$$5.2 \div 10^2 = ?$$

- A. 0.052
- B. 0.52
- C. 520
- D. 5,200

20. Use the table to answer the question.

Number of Juice Boxes	6	12	18	24
Number of Cookies	10	20	30	40

Which ratios of juice boxes to cookies are equivalent to the ratios in the table? Select **all** that apply.

- A. $\frac{1 \text{ juice box}}{2 \text{ cookies}}$
- B. $\frac{9 \text{ juice boxes}}{15 \text{ cookies}}$
- C. $\frac{34 \text{ juice boxes}}{50 \text{ cookies}}$
- D. $\frac{36 \text{ juice boxes}}{60 \text{ cookies}}$
- E. 3 juice boxes to 5 cookies
- F. 15 juice boxes to 9 cookies
- G. 21 juice boxes to 35 cookies



NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Mathematics Reference Sheet

Shape	Area	Circumference
Circle	$A = \pi r^2$	$C = \pi d = 2\pi r$
Triangle	$A = \frac{1}{2}bh$	Perimeter
Rectangle	$A = l \times w$	$P = 2l + 2w = 2(l + w)$
Square	$A = s \times s$	$P = s + s + s + s$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$	
Parallelogram	$A = bh$	

Key	
b = base	l = length
h = height	w = width
B = area of base	s = side length
H = height of triangular prism	
s_1, s_2, s_3 are the lengths of each side of the triangular base	
d = diameter	r = radius
Use 3.14 for π .	

3 – Dimensional Shape	Volume	Surface Area				
Rectangular Prism	$V = lwh = Bh$	$SA = 2lw + 2lh + 2wh = 2B + 2lh + 2wh$				
Triangular Prism	$V = \frac{1}{2}lwh = Bh$	$SA = bh + (s_1 + s_2 + s_3)H = 2B + (s_1 + s_2 + s_3)H$				
Cone	$V = \frac{1}{3}\pi r^2 h$	<table><tr><th>Percent Change</th></tr><tr><td>$\% \text{ change} = \frac{\text{difference in amount}}{\text{original amount}}$</td></tr><tr><th>Pythagorean Theorem</th></tr><tr><td>$c^2 = a^2 + b^2$</td></tr></table>	Percent Change	$\% \text{ change} = \frac{\text{difference in amount}}{\text{original amount}}$	Pythagorean Theorem	$c^2 = a^2 + b^2$
Percent Change						
$\% \text{ change} = \frac{\text{difference in amount}}{\text{original amount}}$						
Pythagorean Theorem						
$c^2 = a^2 + b^2$						
Cylinder	$V = \pi r^2 h$					
Sphere	$V = \frac{4}{3}\pi r^3$					

Standard Units	Metric Units
Conversions – Length	
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)
1 yard (yd) = 3 feet (ft) = 36 inches (in.)	1 meter (m) = 100 centimeters (cm)
1 mile (mi) = 1,760 yards (yd) = 5,280 feet (ft)	1 meter (m) = 1,000 millimeters (mm)
	1 kilometer (km) = 1,000 meters (m)
Conversions – Volume	
1 cup = 8 fluid ounces (fl oz)	1 liter (l) = 1,000 milliliters (ml)
1 pint (pt) = 2 cups	1 liter (l) = 1,000 cubic centimeters (cu. cm)
1 quart (qt) = 2 pints (pt)	
1 gallon (gal.) = 4 quarts (qt)	
Conversions – Weight/Mass	
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)
1 ton = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)