



NSCAS NEBRASKA STUDENT-CENTERED
ASSESSMENT SYSTEM

English

**NSCAS General Grade 5
English Language Arts,
Mathematics, and Science
Practice Test**

NSCAS General Practice Test Grade 5

Student's Name:



Grade 5
General
English Language Arts

Directions:

On the following pages of your practice test booklet are questions for the Grade 5 *Nebraska Student-Centered Assessment System (NSCAS) General English Language Arts* practice test.

Read these directions carefully before beginning the test.

This practice test 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.

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.

Read the passage.

A Traveling Experience

- 1 Ms. Collins raised her arm in the air. Like everyone else in the classroom, Jordan knew that the gesture meant it was time to be quiet and listen. The students watched as their teacher pulled down a large map of the United States.
- 2 “What are some ways of traveling to different states?” Ms. Collins asked. Students offered several suggestions: by car, by bus, by train, or by airplane.
- 3 “I have a fun and interesting way for all of us to see other parts of the country without packing a bag or buying a ticket,” said Ms. Collins. Students sat up a little straighter, eager to hear their teacher’s plan.
- 4 “Our class is going to **participate** in a picture-postcard exchange,” Ms. Collins explained. “We will send postcards with pictures of places in Nebraska to schools in other states. Each of you will send a postcard to a class in two different states. We have twenty-five students in our class. So we will send a postcard to each of the fifty states.”
- 5 The students were becoming enthusiastic about the project. They had lots of questions: where to send the postcards, how a postcard exchange works, and what to write about.
- 6 Ms. Collins waited until everyone was paying attention, and then she continued. “I will provide you with the addresses. Classes that receive a postcard will be asked to mail our class a postcard from their state. So we will exchange postcards with students in other states. When our class receives a postcard, we will place a pin on the class map to mark the state from which the postcard was mailed. I am hoping that we will have a pin in each of the 50 states by the end of the project.
- 7 “Let’s brainstorm some possible ideas about what to write on our postcards. Who can think of a topic that might interest other students? The ideas must be able to fit on a postcard,” stated Ms. Collins.
- 8 “We could write about our school,” said Lisa.
- 9 “We could write about our hobbies,” suggested Wilson.
- 10 “I think we should write about our state,” said Jordan. “Nebraska is a really interesting place.”
- 11 Ms. Collins nodded and encouraged Jordan to keep talking. “What kind of facts would you include?” she asked.

- 12 “I would send a postcard with a picture of the giant porch swing in Hebron, Nebraska,” said Jordan. “I could explain that the swing can hold 25 people at one time.”
- 13 “I would send a postcard with a picture of Boys Town in Omaha since it is a historical place,” said Marcus. “I could write about the statue of a boy carrying his brother.”
- 14 “Those are all good ideas,” said Ms. Collins. “Let’s have the class vote to decide what the postcards will be about.”
- 15 The class talked about the new project and voted that the postcards should tell something about their state. The students would ask the classes who received a postcard to tell something about their state as well. Then the postcard exchange would be like traveling to other states. Ms. Collins could tell that everyone was excited and eager to start.
- 16 The class used postcards that displayed a place of interest in Nebraska on the front. Students wrote some simple facts about the place of interest on the back of the postcard. They mailed the postcards and waited.
- 17 Excitement grew as the mail began to arrive with picture postcards for Ms. Collins’ class. Within two weeks, the classroom map was dotted with pins indicating the different states from which replies had been sent. Each postcard was read aloud when it arrived. Then it was placed in a special album kept at Ms. Collins’ desk. By the end of the month, 50 pins had been placed on the map. All the students were delighted to see a postcard from every state in the nation.
- 18 Students learned more about the states than they had ever known before. They had also gained a better understanding of their state by looking at the picture postcards of popular places in Nebraska. Students began to look up additional facts about the states to share with their classmates. Everyone agreed that the postcard-traveling experience had been a great success.

1. Which sentence BEST describes Ms. Collins?
 - A. She shares her hobbies with students.
 - B. She enjoys traveling to different places.
 - C. She visits relatives who live in other states.
 - D. She provides interesting learning experiences.

2. What does **participate** mean as used in paragraph 4?
 - A. to join
 - B. to watch
 - C. to talk about
 - D. to learn about

3. In paragraph 15, why does the story say that “the postcard exchange would be like traveling to other states”?
 - A. Exchanging postcards will be fun and exciting for the students.
 - B. Visiting new places will provide opportunities to get postcards.
 - C. Getting postcards will be a way of learning about different places.
 - D. Making Nebraska postcards will be an important learning experience.

4. Which sentence BEST states the theme of the story?

- A. Learning can be fun.
- B. Traveling is rewarding.
- C. Students must be prepared.
- D. Teachers have important jobs.

The item on this page is not passage-based.

★ 5. Read the draft paragraph from Nathan’s essay.

If you travel along the rural Highway 75 in Thurston County, Nebraska, you might notice a sign called a historical marker. Historical markers are put up by the state government. The sign tells about 75 Winnebago tribe members who joined with the Nebraska Volunteers in 1865. Nebraska became the 37th state in 1867, two years after the Civil War. These tribe members helped keep peace between the settlers and other native tribes.

Which **two** sentences should Nathan remove to BEST stay on topic?

- A. If you travel along the rural Highway 75 in Thurston County, Nebraska, you might notice a sign called a historical marker.
- B. Historical markers are put up by the state government.
- C. The sign tells about 75 Winnebago tribe members who joined with the Nebraska Volunteers in 1865.
- D. Nebraska became the 37th state in 1867, two years after the Civil War.
- E. These tribe members helped keep peace between the settlers and other native tribes.

The item on this page is not passage-based.

★ 6. Read Brianna's paragraph.

In the summer's morning sunlight, the water was gleaming and the surf felt refreshing on Jacob's feet. He had nothing to do that day, and was enjoying the fresh air. Gathering seashells and skipping stones as he went, Jacob was having a ball exploring the seemingly never-ending beach.

Brianna wants to make more precise word choices. Which word BEST replaces the word went in the paragraph?

- A. jogged
- B. moved
- C. passed
- D. wandered

Read the passage.

Birds of Nebraska

- 1 The state of Nebraska is a bird lover’s paradise. All year long, birds of all colors and sizes fly to and from the state. Around 460 species of birds can be spotted in Nebraska. In fact, birds are so beloved that festivals have even sprung up around some of these feathered celebrities.

The Sandhill Crane

- 2 Springtime in Nebraska brings with it a beautiful sight. Over a quarter of a million sandhill cranes begin to gather. They are getting ready for their migration north for the summer. These tall birds are known for their long legs. They stroll through water and over land in search of plants, rodents, bugs, and even snakes for food. Their loud trumpeting calls echo across the Platte River. The sky and ground are filled with their cream-colored feathers. These beautiful creatures help attract thousands of visitors to Nebraska year after year.

The White Pelican

- 3 Another **remarkable** gathering of birds occurs at the Harlan County Reservoir, where thousands of white pelicans soar majestically across the water and through the sky. Groups of up to 100 of these huge birds travel together. They steadily spiral upward using air currents to help them rise. With a wingspan of up to 9.5 feet, they can circle for long periods of time with little effort. The only North American bird with a greater wingspan than the pelican is the California condor. When it is time for a snack, the pelican floats on the water, scooping fish in its long beak. Pelicans often hunt together in shallow water, cooperating to direct fish toward one another. They eat around four pounds of fish a day, so this kind of cooperation is beneficial for them.

The Burrowing Owl

- 4 Long ago, cowboys riding across the plains began calling burrowing owls “howdy birds.” The small birds would pop their heads out of burrows in the ground and appear to give passersby a friendly nod as if wishing them well. Burrowing owls are still nodding in Nebraska today, though their numbers have declined. Efforts to reduce prairie dog populations have affected the owls as well. These speckled brown birds grow to a little less than one foot tall. They are also known for their strikingly bright yellow eyes, which help them to hunt at night. They mostly eat insects and small mammals. When danger is near, they will call out an alarm to warn other burrowing birds to seek the safety of their homes.
- 5 The sandhill crane, the white pelican, and the burrowing owl are only three of the fascinating birds that make their homes in Nebraska for at least part of the year. It is easy to see why birdwatchers flock to the state to watch and study these birds.

7. What is the MAIN reason why the author believes that Nebraska is a “bird lover’s paradise”?
- A. because Nebraska has birdwatchers visit the state
 - B. because Nebraska has three types of interesting birds
 - C. because Nebraska contains a small population of rare birds
 - D. because Nebraska is home to a large number and variety of birds
8. What can the reader infer about sandhill cranes?
- A. Sandhill cranes do not live in Nebraska all year.
 - B. Sandhill cranes lose their feathers when they hunt.
 - C. Sandhill cranes are more beautiful than white pelicans.
 - D. Sandhill cranes make sounds that are unusual for birds.
9. What does **remarkable** mean as used in paragraph 3?
- A. crowded
 - B. detailed
 - C. interesting
 - D. talkative

10. Which fact BEST supports the idea that Nebraska cowboys liked burrowing owls?
- A. The owls appeared to nod at the cowboys.
 - B. The cowboys gave the owls a cute nickname.
 - C. The cowboys rode across the plains where the owls lived.
 - D. The owl population was greater in the time of the cowboys.
11. Select **two** sentences from the passage that support the idea that some birds help each other.
- A. All year long, birds of all colors and sizes fly to and from the state.
 - B. These beautiful creatures help attract thousands of visitors to Nebraska year after year.
 - C. Pelicans often hunt together in shallow water, cooperating to direct fish toward one another.
 - D. The small birds would pop their heads out of burrows in the ground and appear to give passersby a friendly nod as if wishing them well.
 - E. When danger is near, they will call out an alarm to warn other burrowing birds to seek the safety of their homes.

12. How do the subheadings contribute to the reader's understanding of the passage?
- A. They organize the birds in chronological order.
 - B. They indicate which bird the author will describe.
 - C. They show how each bird is similar to the others.
 - D. They include additional information about each bird.
13. What is the author's purpose for writing the passage?
- A. to inform the reader about how birdwatchers gather during different seasons in Nebraska
 - B. to inform the reader about three interesting types of birds among many found in Nebraska
 - C. to inform the reader about the many places in Nebraska that are popular for birdwatching
 - D. to inform the reader about how some bird populations in Nebraska are thriving while others are declining

The item on this page is not passage-based.

★ 14. Read the student's persuasive essay.

Adopting a pet from a shelter can be a very rewarding experience. It can make people feel helpful to their furry friends because about 30,000 animals end up in Nebraska shelters every year. Another advantage of adopting a pet is that adopting costs less money than buying from a pet store or breeder. Lastly, having a pet is a great way to teach responsibility to children. There are many advantages to adopting a pet, and I hope you think about this the next time you are thinking about getting one.

Which **two** statements could the student add to the paragraph to support the opinion that having a pet teaches responsibility?

- A. Your friends will like to play with your pet.
- B. Pets can keep a person from being lonely.
- C. Most pets have to be fed and watered two times a day.
- D. Pets will make noise when a stranger comes to the door.
- E. Pets who stay mostly indoors need to be exercised every day.

The items on this page are not passage-based.

- ★ 15. Read the paragraph a student wrote about the butterfly life cycle.

Butterflies go through metamorphosis, or change, during their lives. The butterfly goes through a life cycle and the life cycle has four stages and the four stages are part of metamorphosis. The four stages of metamorphosis are egg, larva, pupa, and adult. Some butterflies go through the entire process in only four months, and other butterflies take up to a year.

Which sentence is the BEST revision of the underlined sentence?

- A. The butterfly's life cycle has four stages, which are part of metamorphosis.
- B. The butterfly goes through a life cycle that has four stages and are part of metamorphosis.
- C. The butterfly's life cycle has four stages, and each stage of the butterfly's life cycle is part of metamorphosis.
- D. The butterfly goes through a life cycle, the life cycle has four stages, and each stage is part of metamorphosis.

- ★ 16. Read the sentence.

Having finished our lunch we prepared for an early afternoon swim.

Which word in the sentence should be followed by a comma?

- A. lunch
- B. early
- C. finished
- D. prepared

Read the passage.

Pasta Pals

- 1** Ethan, Raj, and TJ jogged along the sidewalk, passing a soccer ball. While chatter of sports and school bounced between the three teammates, Luca trailed behind. He was so caught up in worrying about his plans that he could barely keep up with the others.
- 2** All four boys were on the soccer team; it was the first activity Luca had joined when he started at his new school. Now they were on their way to Luca's grandmother's house because Luca had promised his new teammates a delicious feast and a game of soccer later.
- 3** Earlier that week, Luca had mentioned to his grandmother that he would like to make friends at his new school, but he wasn't sure how. "Food is the glue that brings people together," Nonna had said. "Bring some of the boys from your soccer team here. We will make Italian pasta, and you will all become fast friends."
- 4** They arrived at Luca's house and there stood Nonna, smiling and beckoning them into her large, sunny kitchen.
- 5** "Guys, meet Giovanna Rossi—my nonna," Luca said.
- 6** He introduced each of his friends to Nonna and was surprised when TJ said, "TJ's short for Timothy James, ma'am. I'm named after my granddad. Can you tell me what smells so good?"
- 7** Nonna laughed, pointing to a large covered pot simmering on the stove. "It is our family recipe for red sauce. My nonna taught it to me when I was just a girl, and she learned it from her nonna back in Calabria, Italy. It cooks all day to bring out the best flavors."
- 8** "I've made spaghetti before," Ethan volunteered, "and macaroni and cheese plenty of times for my little sisters. It's easy."
- 9** "Noodles from a box are a time saver for busy families," Nonna agreed, "but there is great satisfaction in working with fresh ingredients and treasured recipes to create something special for your family and friends. How would you like to make your own pasta to use in ravioli?"
- 10** The boys hesitated for a moment, and Luca felt his palms grow sweaty.
- 11** "Do we get to eat what we make?" TJ asked.
- 12** "May I take some home to show my papa?" Raj added.
- 13** "Absolutely to both questions!" Nonna laughed.

- 14 Luca smiled in relief at his grandmother and she winked back. So far, so good.
- 15 In no time, the four boys were mixing small mountains of flour with eggs, water, and salt and laughing at the sticky mess squishing between their fingers. The laughter turned to groans when Nonna taught them to knead. Folding and flattening, turning and pounding the dough was entertaining at first, but after the necessary ten minutes, their arms felt as wobbly as wet noodles. They deposited their smooth, rounded pasta lumps beneath some plastic wrap to rest and then cheerfully accepted a treat of milk and crescent-shaped almond cookies.
- 16 With a large flour-coated rolling pin, Nonna demonstrated the next step. "Make your pasta as thin as possible," she said, lifting her flattened dough over her hand with her fingers spread wide. "If you can see your hand through the pasta, it's thin enough."
- 17 To cut the sheets of pasta into the appropriate shapes, Nonna brought out her bag of pasta tools. She showed the boys how to use a round cutter with scalloped edges to create perfect wavy-edged dough circles. Raj and Luca brushed half of the dough circles with an egg wash. Then TJ and Ethan dropped a meatball-sized scoop of the parmesan and ricotta cheese filling in the center.
- 18 Using Nonna's pasta tools, the boys cut the leftover dough into soccer balls, wiggly worms, and pasta-people. TJ stacked some of the soccer-ball shapes, saying, "Looks like a stack of pancakes, doesn't it?"
- 19 Everyone laughed.
- 20 By this time, the boys and even Nonna were hungry. A harmony of growling stomachs, bubbling pasta, and simmering seasoned sauce filled the kitchen. Nonna asked the boys to set the table with plates, glasses, and silverware. "This ravioli and sauce is the best I've ever eaten!" TJ proclaimed. "Would it be all right if we made pasta together again sometime? I had a lot of fun."
- 21 As Ethan and Raj enthusiastically agreed, Luca shared a **confidential** smile with Nonna. He was grateful Nonna had cooked up a plan to help him make new friends.

17. What does Nonna mean when she says that “Food is the glue that brings people together”?

- A. Creating new friendships is built on shared experiences.
- B. Finding new friends means connecting with many people.
- C. Joining together for a meal helps repair broken friendships.
- D. Building new friendships takes effort combined with patience.

18. **Read this sentence from the story.**

“The boys hesitated for a moment, and Luca felt his palms grow sweaty.”

What does the sentence reveal about Luca?

- A. He is nervous about his cooking skills.
- B. He thinks it is exciting to make ravioli.
- C. He is worried about the success of his grandmother’s plan.
- D. He thinks his grandmother should have used store-bought ravioli.

19. Select **two** examples from the story that show the closeness between Luca and Nonna.
- A. “Bring some of the boys from your soccer team here.”
 - B. “My nonna taught it to me when I was just a girl, and she learned it from her nonna back in Calabria, Italy.”
 - C. Luca smiled in relief at his grandmother and she winked back.
 - D. She showed the boys how to use a round cutter with scalloped edges to create perfect wavy-edged dough circles.
 - E. As Ethan and Raj enthusiastically agreed, Luca shared a confidential smile with Nonna.
20. Which sentence BEST describes a theme of the story?
- A. Everyone can learn how to make new friends.
 - B. Trying new foods together can build friendships.
 - C. Family members can be helpful in surprising ways.
 - D. Taking a chance on something new can lead to good results.



**Grade 5
General
Mathematics**

Directions:

On the following pages of your practice test booklet are questions for the Grade 5 *Nebraska Student-Centered Assessment System (NSCAS) General Mathematics* practice test.

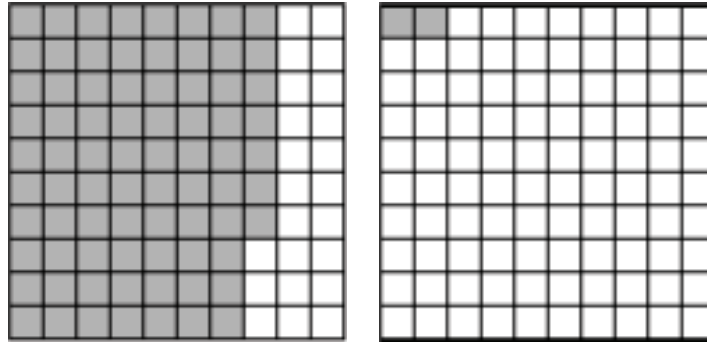
Read these directions carefully before beginning the test.

This practice test 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. Some questions will ask you to construct an answer by following the directions given.

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 test booklet. You may refer to this page at any time during the test.
- Be sure to answer ALL the questions.

1. This question has two parts. Answer Part A, and then answer Part B.
Use the models to answer the question.



Part A

What is the sum of $0.77 + 0.02$?

- A. 0.772
- B. 0.79
- C. 0.792
- D. 0.97

Part B

What is the difference of $0.77 - 0.02$?

- A. 0.768
- B. 0.758
- C. 0.75
- D. 0.57

2. What is the product of 487×39 ?

- A. 703
- B. 5,844
- C. 16,033
- D. 18,993

3. A basketball team has played nine games so far this season. The list shows the number of points the team scored at each game.

58, 43, 54, 43, 55, 57, 39, 76, 82

Which prediction about the team's score in the next game can MOST LIKELY be made using the data?

- A. The team will likely score 43 points in the next game.
- B. The team will likely score more than 80 points in the next game.
- C. The team will likely score between 40 and 60 points in the next game.
- D. The team will likely score either less than 39 points or more than 82 points in the next game.

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

A student measured the heights of some plants. This list shows the heights, in inches.



Part A

What is the difference between the heights of the middle two plants?

- A. $\frac{5}{8}$ inch B. $3\frac{5}{8}$ inches
C. $6\frac{3}{4}$ inches D. $6\frac{3}{8}$ inches

Part B

What is the difference between the heights of the tallest plant and the shortest plant?

- A. $1\frac{7}{16}$ inches B. $1\frac{7}{8}$ inches
C. $2\frac{1}{8}$ inches D. $2\frac{2}{3}$ inches

NSCAS GENERAL — MATHEMATICS

5. A sign has a width of 254 millimeters.

What is the width of the sign in centimeters? Write the answer in the box.

centimeters

6. What is $[(16 - 6) \div 2] + (3 \times 3)$?

- A. 14
- B. 22
- C. 24
- D. 48

7. Which values make the comparison true? Write a value in each box.

$7\frac{1}{2}$

$7\frac{1}{4}$

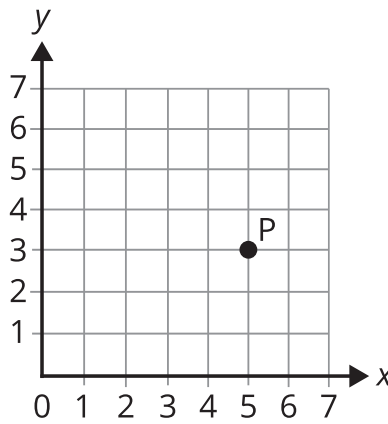
$7\frac{25}{100}$

7.04

7.250

$< 7.25 <$

8. Use the coordinate grid below to answer the question.



What are the coordinates of point P?

- A. (3, 5)
 - B. (5, 3)
 - C. (5, 4)
 - D. (6, 3)
9. What is $4,376 \div 36$?
- A. 121
 - B. 121 R20
 - C. 122
 - D. 122 R16

10. Which list orders the numbers from least to greatest?

- A. 6.25, 6.5, $6\frac{4}{5}$, $6\frac{3}{4}$
- B. 6.5, 6.25, $6\frac{3}{4}$, $6\frac{4}{5}$
- C. 6.25, 6.5, $6\frac{3}{4}$, $6\frac{4}{5}$
- D. 6.5, $6\frac{4}{5}$, 6.25, $6\frac{3}{4}$

11. Use the figure to answer the question.



Which words or phrases BEST describe the figure?

Select **three**.

- A. square
- B. rectangle
- C. trapezoid
- D. The figure has exactly four angles.
- E. The figure has four sides of equal length.
- F. The figure has exactly one set of parallel sides.
- G. The figure has exactly two sets of parallel sides.

12. What is 321×254 ?

A. 67,089

B. 71,434

C. 80,534

D. 81,534

13. What is the standard form of $90,000 + 800 + 50 + 2 + 0.1 + 0.007$?

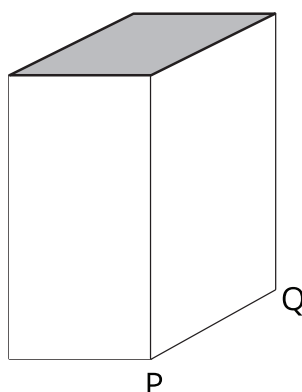
A. 90,852.107

B. 90,852.017

C. 98,052.107

D. 98,052.017

14. Use the rectangular prism to complete the statements.



Select the correct choices to complete the sentences about a rectangular prism.

Line segment PQ is called a(n) (**edge, face, vertex**).

The shaded part of the rectangular prism is called a(n) (**edge, face, vertex**).

The number of edges of the rectangular prism is (**6 8 12**).

15. On Sunday, a student starts reading a book with 140 pages. Each day, the student records the page number he is on when he finishes reading for that day. The table shows this data.

Daily Reading Log

Day	Ending Page Number
Sunday	21
Monday	41
Tuesday	60
Wednesday	79
Thursday	
Friday	
Saturday	

Which **two** predictions can be made using the data in the table?

- A. The student will read about 10 pages on Friday.
 - B. The student will finish reading the book on Friday.
 - C. The student will read about 20 pages on Thursday.
 - D. The student will finish reading the book on Saturday.
 - E. The student will start reading a new book on Saturday.
16. Evaluate.

$$32 \div 4 \times (20 - 16)$$

- A. 2
- B. 16
- C. 32
- D. 144

NSCAS GENERAL — MATHEMATICS

17. What is the difference of $\frac{4}{5} - \frac{1}{3}$? Choose from the numbers given and write the answer in the blank.

1

2

3

5

7

8

9

15

$$\frac{4}{5} - \frac{1}{3} = \underline{\hspace{2cm}}$$

18. Use the table to answer the question.

Fourth Graders' Favorite Beverage

Beverage	Votes
Apple juice	
Orange juice	
Soda	
Milk	

The table shows the favorite beverage of the fifth-grade students. Based on the table, how many more students chose apple juice or orange juice than soda?

- A. 4
- B. 6
- C. 10
- D. 12

19. Use the rule to answer the question.

$$y = 4x$$

Which points are formed by the rule?

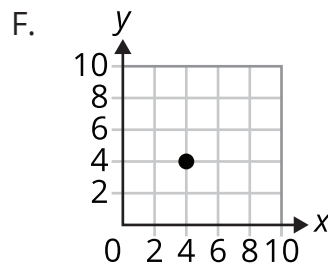
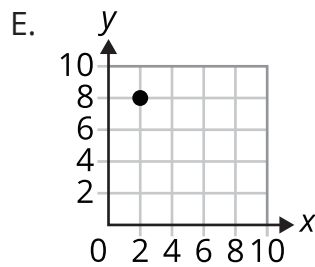
Select **three** options.

A. (0, 0)

B. (3, 4)

C. (8, 2)

D. (5, 20)



20. What is $\frac{1}{4} \div 3$?

A. $\frac{1}{12}$

B. $\frac{3}{4}$

C. $\frac{4}{3}$

D. 12



Grade 5 General Science

Directions:

On the following pages of your practice test booklet are questions for the Grade 5 *Nebraska Student-Centered Assessment System (NSCAS) General Science* practice test.

Read these directions carefully before beginning the test.

This practice test will include several different types of questions. Multiple choice questions will ask you to select an answer from among several answer 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. Some questions will ask you to construct an answer by following the directions given.

For all questions:

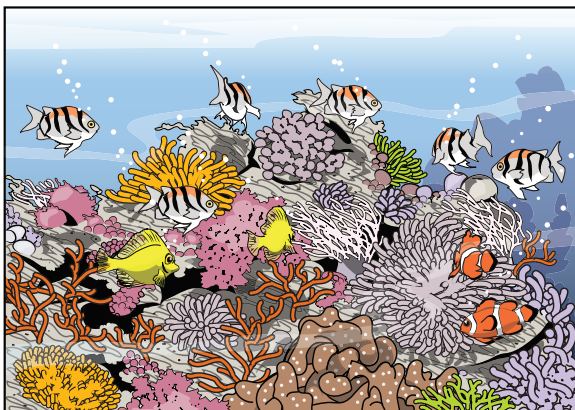
- Read each question carefully and choose the best answer.
- Review each question carefully. You may not return to a previous question.
- You may use scratch paper to make notes.
- Be sure to answer ALL the questions.

1. Use the information to answer the question.

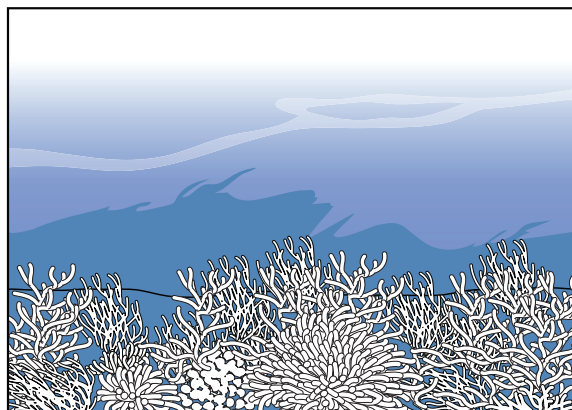
Changing Coral

Scientists have been investigating coral reef ecosystems over time. They have observed many changes.

Coral Reef before 1980



Coral Reef Today



In some areas, the bright colors of the coral reef have disappeared. This is called **coral bleaching**. The coral's colors come from plant-like algae living in the coral. Students want to know more about how coral bleaching changes the relationships between organisms in the coral reef.

In which resource might the students find information about what is causing the changes to the coral reef?

- A. historical maps of the coral reef
- B. pictures of the coral reef from a family vacation
- C. weather forecast reports for the coral reef today
- D. scientific journal articles on the marine biology of coral reefs

Review each question carefully. You may not return to a previous question.

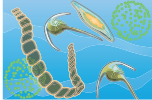
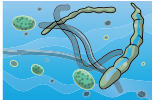
2. Use the information to answer the question.

Changing Coral

Students research corals and find out that corals and zooxanthellae, a microscopic algae, work together to survive. Zooxanthellae make nutrients through photosynthesis that feed the corals. The corals then give shelter to the algae.

Students collect information from different sources and create a list of the organisms in the coral reef.

Reef Organisms

Organism	Picture	How It Obtains Energy
dolphin		eats fish
triggerfish		eats coral
coral		from algae
algae		from the sun
bacteria		from dead organisms

A student hypothesizes that consumers are most affected by coral bleaching.

Which organism in the table is a producer?

- A. coral
- B. algae
- C. dolphin
- D. triggerfish

Review each question carefully. You may not return to a previous question.

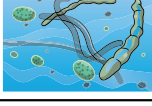
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A student hypothesizes that consumers are most affected by coral bleaching.

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

Part A

Which type of model should the student make to show the relationships between the organisms?

- A. a T-chart
- B. a food web
- C. a bar graph
- D. a circle chart

Part B

Which parts of the system should be included in the model chosen in the answer to Part A?

Select **four** parts.

- A. producers
- B. consumers
- C. decomposers
- D. carbon dioxide
- E. population size
- F. energy transferred

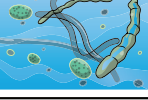
Review each question carefully. You may not return to a previous question.

4. Use the information to complete the task.

Changing Coral

Scientists have been investigating coral reef ecosystems over time. They have observed many changes. In some areas, the bright colors of the coral reef have disappeared. The coral's colors come from plant-like algae living in the coral. Students want to know more about how coral bleaching changes the relationships between organisms in the coral reef.

Reef Organisms

Organism	Picture	How It Obtains Energy
dolphin		eats fish
triggerfish		eats coral
coral		from algae
algae		from the sun
bacteria		from dead organisms

Complete the model of the ocean ecosystem to describe how matter moves among the five organisms.

Write each organism in a box in the model.

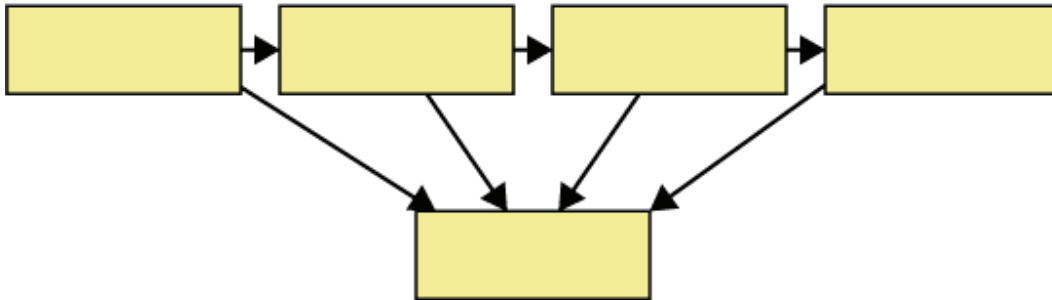
dolphin

triggerfish

coral

algae

bacteria

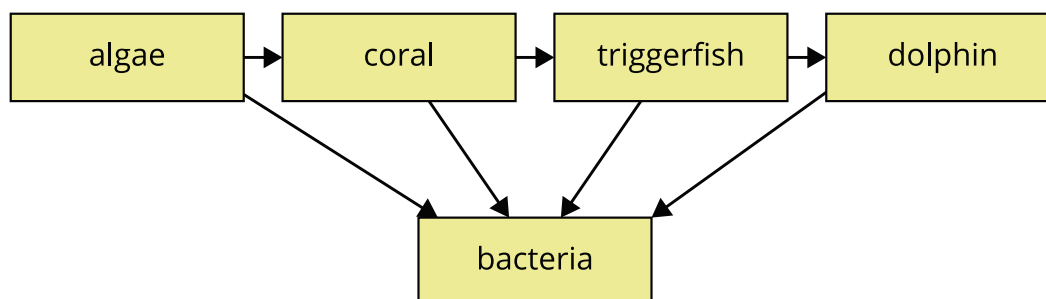


Review each question carefully. You may not return to a previous question.

5. Use the information to answer the question.

Changing Coral

Scientists make this model of a coral ecosystem to predict how coral bleaching will affect the organisms.



How will the populations of the organisms be affected first if the population of coral algae greatly decreases?

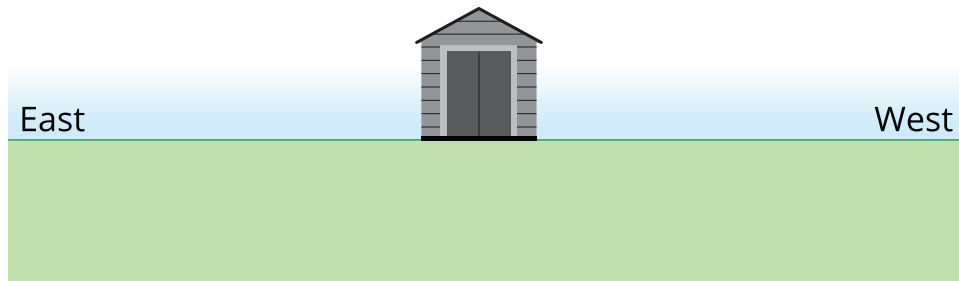
Select the effect on each organism's population.

Organism	Population Effect		
	increase	decrease	little to no effect
dolphin	increase	decrease	little to no effect
triggerfish	increase	decrease	little to no effect
coral	increase	decrease	little to no effect

Review each question carefully. You may not return to a previous question.

6. Use the information to answer the question.**Garden Shadows**

Students are going to build a community garden next to the garden shed at their school. The students want to know the best place to put the garden beds so they receive afternoon sun. The picture shows the shed.



Where is the sun located in the morning in relation to the shed?

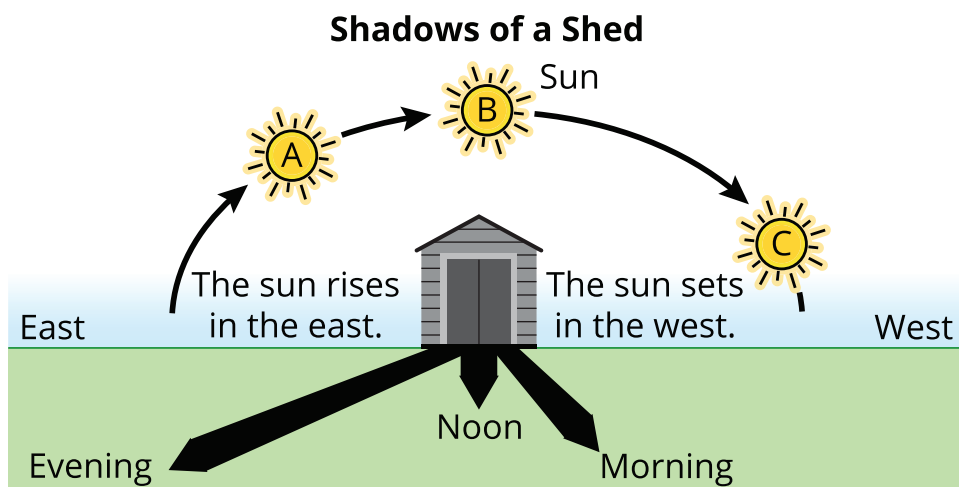
- A. to the east
- B. to the west
- C. to the north
- D. to the south

Review each question carefully. You may not return to a previous question.

7. Use the information to complete the task.

Garden Shadows

A group of students wants to test the way the shadows affect the different locations around the shed. They take measurements of shadows around the shed throughout the day and draw a model.



Explain how shadows move throughout the day.

Select the correct choices to complete the sentences.

When the sun is rising, the shadow is pointing (**east, west**).

When the sun is setting, the shadow is pointing (**east, west**).

During the day, the shadow moves (**east, west**) to (**east, west**).

Review each question carefully. You may not return to a previous question.

8. Use the information to answer the question.

Garden Shadows

The students measure the length of the shed's shadows throughout a day. They record their data in a table.

Length of a Shadow During the Day in May

Time of Day	Length of Shed's Shadow (meters)
7:30 a.m.	21.4
9:30 a.m.	9.5
11:30 a.m.	5.6
1:00 p.m. (The sun is at its highest point in the sky at 1:20 p.m.)	4.5
3:00 p.m.	5.2
4:00 p.m.	6.5
6:00 p.m.	11.6
8:00 p.m. (Sunset is at 8:35 p.m.)	31.9

Complete the sentences to provide evidence that supports how shadow length shows patterns during the day.

Write the correct time of day in each blank. Options may be used more than once.

7:30 a.m.

1:20 p.m.

8:35 p.m.

Between 8:00 a.m. and _____, the length of the shadow decreases.

Then, between _____ and _____, the length of the shadow increases.

Review each question carefully. You may not return to a previous question.

9. Use the information to answer the question.

Garden Shadows

The students measure the length of the shed's shadows throughout a day. They record their data in a table.

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6:00 p.m.	11.6
8:00 p.m. (Sunset is at 8:35 p.m.)	31.9

Which statement BEST describes a pattern in shadow length throughout a day?

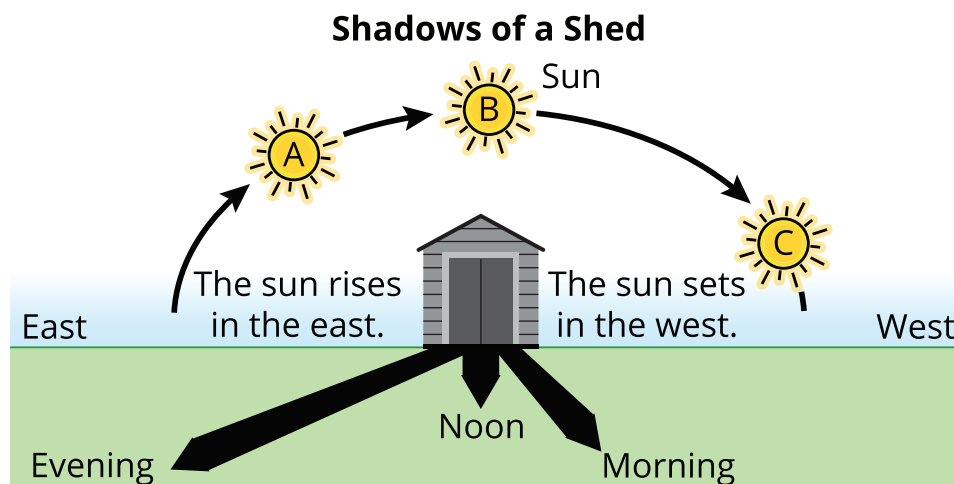
- A. A shadow is shortest in the early morning.
- B. A shadow is longest in the late afternoon.
- C. A shadow is shortest when the sun is closest to the horizon and longest when the sun is farthest from the horizon.
- D. A shadow is longest when the sun is closest to the horizon and shortest when the sun is farthest from the horizon.

Review each question carefully. You may not return to a previous question.

10. Use the information to complete the task.

Garden Shadows

Students are going to build a community garden next to the garden shed at their school. The students want to know the best place to put the garden beds so they receive afternoon sun. The picture shows the shed.



The students notice that the shed's shadow falls to the west in the morning.

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

Part A

What data will the students use to decide where to plant the garden?

- A. height of shed
- B. hours of daylight
- C. location of shadows
- D. average daily temperature

Part B

Where should the garden beds be planted to get the most afternoon sun?

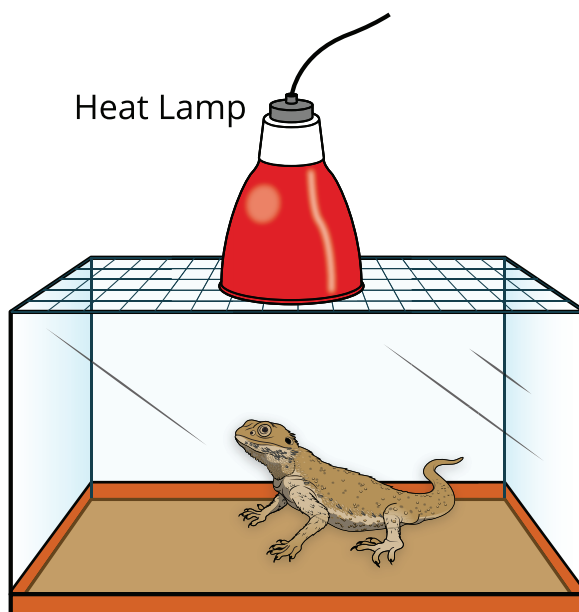
- A. to the east
- B. to the west
- C. to the north
- D. to the south

Review each question carefully. You may not return to a previous question.

11. Use the information to answer the question.

Designing a Lizard Habitat

A science class has a lizard as a class pet. The lizard is not staying warm enough in its habitat.



The students want to design a better habitat to maintain the proper temperature for the lizard. They want to change the material at the bottom of the habitat to collect more heat from the heat lamp.

Which investigation would help the students identify the best material for the bottom of the habitat?

- A. Observing the texture of different materials.
- B. Measuring the height of the different walls of the habitat.
- C. Recording the temperature of the cage in four different locations.
- D. Comparing how different materials affect the temperature of the habitat.

12. Use the information to answer the question.**Designing a Lizard Habitat**

Students decide to compare how different materials placed on the bottom of the tank affect the temperature of the lizard habitat.

Materials can be identified by their properties. One property is how materials conduct heat. To compare the different materials, the students conduct an investigation to measure how quickly heat flows through four different materials that could be used in the lizard habitat.

Which tool should be used to measure how long it takes for heat to flow through the different materials?

- A. a ruler
- B. a balance
- C. a stopwatch
- D. a microscope

13. Use the information to answer the question.**Designing a Lizard Habitat**

Materials can be identified by their properties. One property is how materials conduct heat. To compare the different materials, the students conduct an investigation to measure how quickly heat flows through four different materials that could be used in the lizard habitat.

Students use four containers made of four different types of materials. They place one ice cube in each container and measure the amount of time it takes to melt. For the four materials:

- Each container is the same volume.
- The ice cubes are the same size.
- Observations are collected every minute.
- The total time it takes for the ice to melt is recorded.

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

Part A

Which variables in the experiment are controlled?

Select **three** variables.

- A. size of ice cube
- B. size of container
- C. number of ice cubes
- D. type of container material
- E. time it takes the ice to melt

Part B

Which variable is tested in the investigation?

- A. how the size of the ice cube affects how quickly it melts
- B. how the number of ice cubes changes based on container size
- C. how long it takes ice to melt in containers made of different materials
- D. how the room temperature changes when ice is added to the containers

Review each question carefully. You may not return to a previous question.

14. Use the information to answer the question.

Designing a Lizard Habitat

The students record their data from their lizard habitat investigation. Table 1 describes the observable properties of the four different containers used in the investigation that were made of materials A, B, C, and D. It shows how long it takes one ice cube to melt in each container.

Table 1. Investigation Data

Container	Property of Material	Time to Melt (minutes)
A	• clear, blue color • stiff	6
B	• white color • bends slightly • goes back into shape without breaking	9
C	• light brown • unbendable • bending results in a crack	4
D	• gray • thin, bendable • tears	7

Conductivity is how easily heat can move through a material. Materials with high conductivity will lose heat much faster than materials with low conductivity.

Based on Table 1, which material has the LOWEST conductivity?

- A. material A B. material B
- C. material C D. material D

Review each question carefully. You may not return to a previous question.

15. Use the information to answer the question.

Designing a Lizard Habitat

The students identify container B as the material with the lowest conductivity. They want to use this material for the lizard’s habitat so that it stays warmer.

Table 1. Properties of Drinking Containers

Container	Property of Material	Time to Melt (minutes)
B	• white color • bends slightly • goes back into shape without breaking	9

Table 2 shows the properties of three different materials that can be used to make the bottom of lizard habitats.

Table 2. Properties of Lizard Habitat Materials

Material	Properties
Foam	• extremely light weight and flexible • usually white • very low heat flow
Newspaper	• light weight material • usually gray • medium heat flow
Plastic	• light weight material • may be transparent • medium heat flow
Rubber	• medium weight material • dark in color • high heat flow

Select the correct words to complete the sentence(s).

Container B is made of (**foam, newspaper, plastic, rubber**).

The bottom of the lizard’s habitat should be made from this material because it is the (**highest, lowest**) conductor of heat energy from the heat lamp.



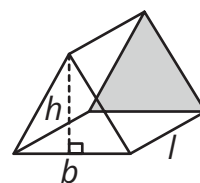
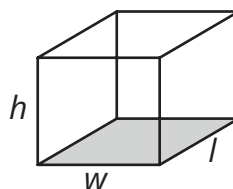
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Mathematics Reference Sheet

2-Dimensional 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	$A = bh$	

3-Dimensional Shape	Volume	Surface Area
Rectangular Prism	$V = lwh = Bh$	SA = the sum of the areas of all the faces
Triangular Prism	$V = \frac{1}{2}bhl = Bl$	SA = the sum of the areas of all the faces
Cone	$V = \frac{1}{3}\pi r^2h$	
Cylinder	$V = \pi r^2h$	
Sphere	$V = \frac{4}{3}\pi r^3$	

In the images to the right, the shaded faces are the bases.



2-Dimensional Shape Key		
b = base length	l = length	s = side
h = height	w = width	
d = diameter	r = radius	

Use 3.14 for π .

3-Dimensional Shape Key		
d = diameter	l = length	w = width
r = radius	h = height of shape	B = area of base
	b = base length	

Percent Change	Pythagorean Theorem
% change = $\frac{\text{difference in amounts}}{\text{original amount}}$	$c^2 = a^2 + b^2$

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)