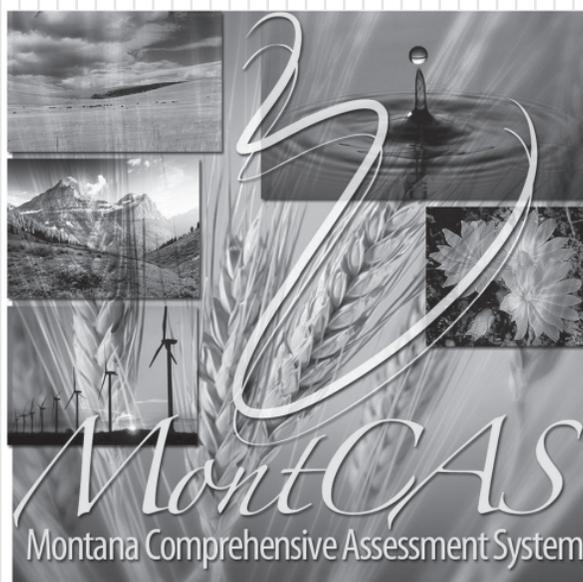


Montana Comprehensive Assessment System (MontCAS CRT)

GRADE 4
COMMON RELEASED ITEMS
SPRING 2015



opi.mt.gov

Montana
Office of Public Instruction
Denise Juneau, State Superintendent

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Science Directions

This Science test contains three test sessions. Mark or write your answers in the Answer Booklet. Use a pencil to mark or write your answers.

This test includes two types of questions: multiple-choice and constructed-response questions.

For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one answer. After you have chosen the correct answer to a question, find the question number in your Answer Booklet and completely fill in the circle for the answer you chose. Be sure the question number in the Answer Booklet matches the question number in the Test Booklet. The example below shows how to completely fill in the circle.

CORRECT MARK <input checked="" type="radio"/>	INCORRECT MARKS <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>
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If you decide to change your answer to a question, erase the wrong mark completely before filling in the circle of the new answer. Be sure you have only one answer marked for each question. **If two circles are bubbled in for the same question, that question will be scored as incorrect.**

If you are having difficulty answering a question, skip the question and come back to it later. Make sure you skip the circle for the question in your Answer Booklet.

For the other types of questions in the Test Booklet, you will be asked to write your answers in the box provided. Read the question carefully. If a question asks you to explain your answer or to show your work, be sure to do so.

You may make notes or use highlighters in your Test Booklet, but you must bubble or write your final answers in your Answer Booklet. **Do not make any stray or unnecessary marks in your Answer Booklet.**

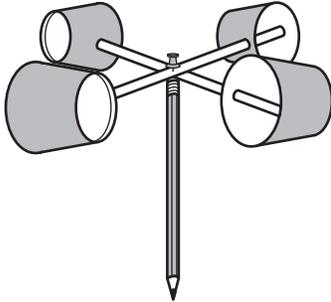
Let's work through a sample question together to be sure you understand the directions.

Sample Question

1. What is the state animal of Montana?
 - A. elephant
 - B. giraffe
 - C. grizzly bear
 - D. zebra

Science

1. Students used paper cups and a pencil to make the anemometer shown below.



When the wind blows, the paper cups spin around the pencil. What does the anemometer measure?

- A. the amount of air pollution
- B. the amount of air that fills each cup
- C. the weight of the cups on the pencil
- D. the speed of the wind pushing on the cups

2. A student measures the outside temperature six times during a day. The table below shows the temperatures he recorded.

Temperature Change

Time	Temperature (°F)
8:00 A.M.	52
9:30 A.M.	58
11:00 A.M.	63
12:30 P.M.	65
2:00 P.M.	68
3:30 P.M.	68

When did the greatest change of temperature occur?

- A. between 8:00 A.M. and 11:00 A.M.
- B. between 9:30 A.M. and 12:30 P.M.
- C. between 11:00 A.M. and 2:00 P.M.
- D. between 12:30 P.M. and 3:30 P.M.

3. Which question can be **best** answered by a scientist using a microscope?
- A. Does Earth rotate around the Sun?
 - B. How does sound travel through air?
 - C. What causes people to become ill?
 - D. Why are some materials magnetic?
4. When are there more hours of daylight?
- A. when it is winter
 - B. when it is summer
 - C. when the Sun is rotating slower
 - D. when Earth is rotating slower

5. A blacksmith places a metal horseshoe in a hot flame, as shown below. He then shapes the horseshoe using a heavy hammer.



Why must the blacksmith place the horseshoe into the flame before he shapes it?

- A. to change the color of the horseshoe
- B. to kill the germs on the horseshoe
- C. to make the horseshoe warm
- D. to make the horseshoe soft

6. The picture below shows a fossilized dinosaur skull.



What can scientists learn from this dinosaur fossil?

- A. what the dinosaur ate
- B. the color of the dinosaur's skin
- C. the sounds that the dinosaur made
- D. how the dinosaur reproduced

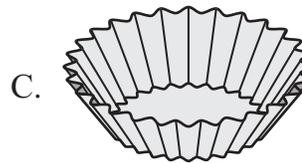
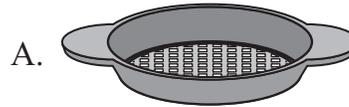
7. A student needs a container that does not break easily, is see-through, is waterproof, and does not rust. Which type of container does the student need?

- A. a glass container
- B. a metal container
- C. a plastic container
- D. a wood container

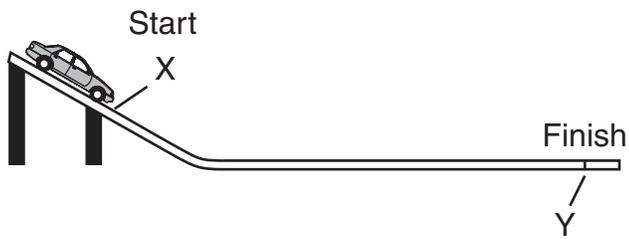
8. A student sees a small, hurt animal on the edge of a hiking trail. What is the safest way the student can let a park ranger know about the animal?

- A. Use a stick to move the animal to a clear area where a park ranger can see the animal.
- B. Leave food on the trail for the animal and wait until a park ranger finds the animal.
- C. Catch the animal and carry it in a backpack to a park ranger.
- D. Take pictures and tell a park ranger where the animal can be found.

9. A student has a mixture of sand and dry pea seeds. Which of the following should the student use to separate the sand from the pea seeds?



10. The picture below shows a model raceway.



Which of the following causes the toy car to move from point X to point Y on the track?

- A. gravity
 - B. magnetism
 - C. mass
 - D. speed
11. A group of fourth-grade students is making a model of a beaver dam. Which materials would make their model **most** like a real beaver dam?
- A. modeling clay and grass on a paper plate
 - B. wood chips and rocks on the playground
 - C. papier-mâché in a bucket of water
 - D. mud and sticks in a tub of water

12. The environment around an oak tree can affect the number of acorns the oak tree grows each year. The table below shows the average number of acorns grown on each branch of four different oak trees.

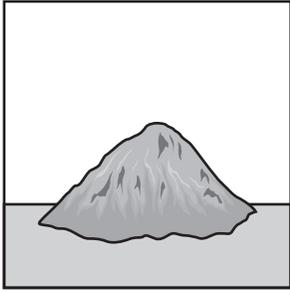
Oak Tree	Average Number of Acorns per Branch
W	24–28
X	12–14
Y	6–8
Z	16–20

Which tree **most likely** lives in the shade of another tree?

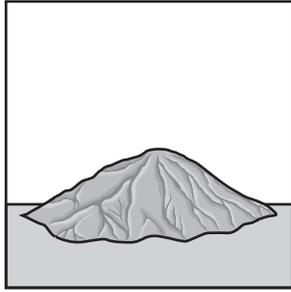
- A. Oak Tree W
- B. Oak Tree X
- C. Oak Tree Y
- D. Oak Tree Z

13. The pictures below show a pile of dirt before and after a week of rainy weather.

Before Rain



After Rain

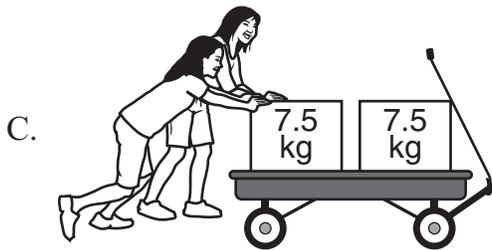
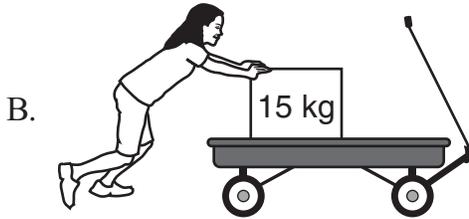


Which sentence **best** explains why the pile of dirt changed size?

- A. The pile of dirt eroded.
 - B. The pile of dirt weathered.
 - C. The pile of dirt evaporated.
 - D. The pile of dirt condensed.
14. Some plants produce seeds after pollen is carried from one plant to another by wind, water, or insects. What does this process help plants do?
- A. find food
 - B. find water
 - C. grow taller
 - D. make new plants
15. The surface of Bitterroot Lake freezes during the winter. In which part of the lake do **most** fish live during the winter?
- A. at the top
 - B. near the bottom
 - C. along the shore
 - D. inside lake ice

16. What does a tree need daily to be healthy?
- A. water, seeds, space, sunlight
 - B. water, good soil, birds, sunlight
 - C. water, air, space, sunlight
 - D. water, flowers, space, sunlight
17. How should a gardener set up an experiment to test which type of plant food grows the largest plants?
- A. Give the plants equal amounts of the same plant food.
 - B. Give the plants different amounts of the same type of plant food.
 - C. Give the plants equal amounts of the same plant food but put the plants in different places.
 - D. Give the plants equal amounts of different types of plant foods.
18. Oxygen and carbon dioxide are gases found in the air. Why are these gases necessary for life on Earth?
- A. so that animals can breathe and plants can make food
 - B. so that there will be enough rain on Earth
 - C. so that the temperatures stay between 0°C and 40°C
 - D. so that Earth's atmosphere stays in place
19. Which activity of the muscular system helps a rabbit escape from a fox?
- A. growth
 - B. movement
 - C. nutrition
 - D. protection

20. Students are pushing 15 kg of mass in a wagon. Which wagon would **most likely** move fastest?



21. A student weighs a 12-inch piece of aluminum foil. Then he cuts the foil in half and weighs one piece. Finally, the student makes a toy boat with the same half piece of foil. The table below shows the weight of each piece of foil.

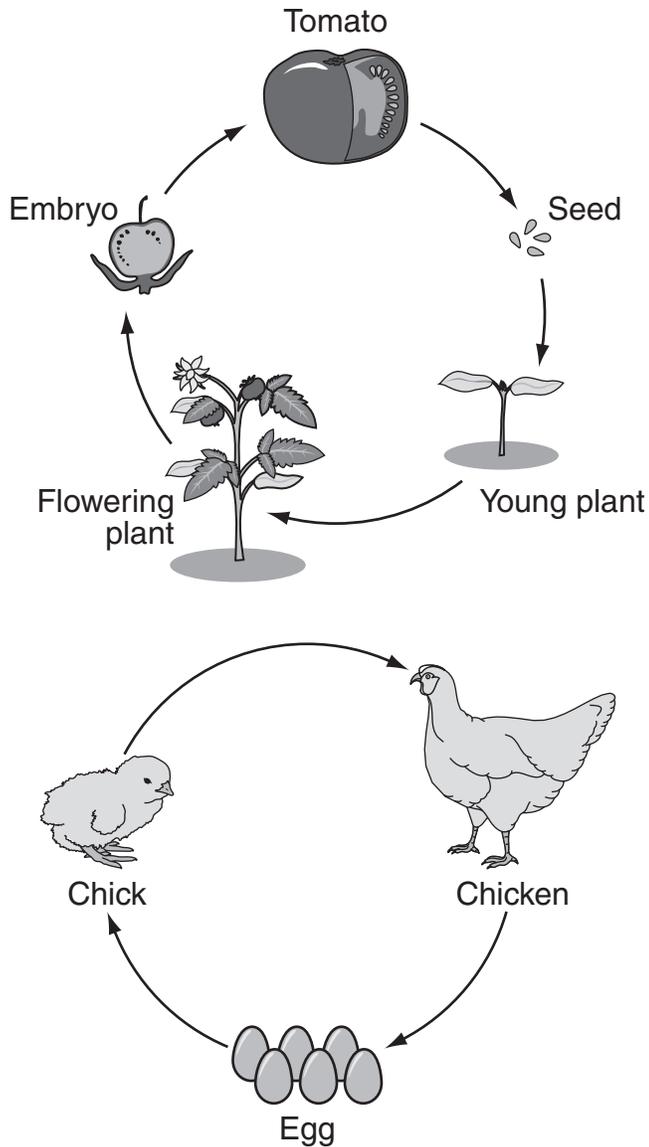
Weight of Aluminum Foil

Object	Weight
 12-inch foil	28 grams
 6-inch foil	14 grams
 Foil boat	?

What is the weight of the foil toy boat?

- A. 8 grams
- B. 10 grams
- C. 14 grams
- D. 18 grams

22. The pictures below show the life cycles of a plant and an animal.



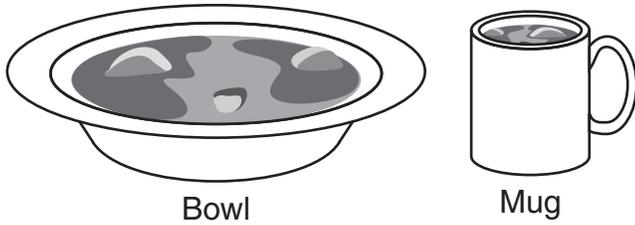
How are the life cycles of this plant and animal alike?

- A. In both life cycles organisms reproduce.
- B. In both life cycles organisms learn to eat.
- C. Organisms in both life cycles live a long time.
- D. Organisms in both life cycles take care of their young.

23. Spacecraft were sent to Mars to collect data. What is one important discovery the spacecraft have made?

- A. The surface of Mars is flat.
- B. Mars has air like Earth does.
- C. There was once liquid water on Mars.
- D. The surface of Mars is made up of sand.

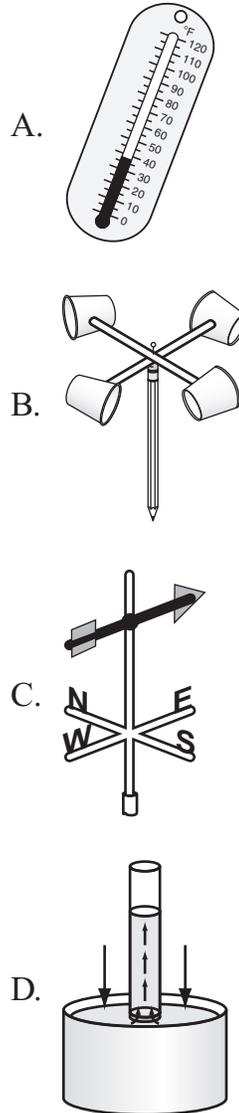
24. The picture below shows a bowl and a mug.



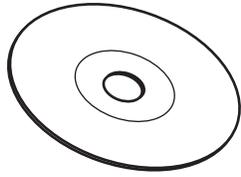
If the bowl and the mug are filled with the same amount of hot soup, which will get cooler faster?

- A. The mug, because the sides of the mug touch the air.
 - B. The mug, because it is made for hot materials.
 - C. The bowl, because it is made for all materials.
 - D. The bowl, because more soup touches the air.
25. Which group includes both fish and birds?
- A. animals with bones
 - B. animals with gills
 - C. animals with legs
 - D. animals with hair

26. Which tool would be used to find out if the air pressure is changing?



27. Different types of technology used in schools are shown below.



DVD



Calculator



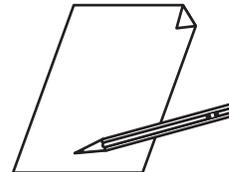
Television



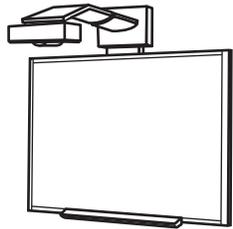
The Internet



Personal computer



Pencil and paper



Electronic whiteboard

Select three types of technology and explain how they make learning easier for students.

Scoring Guide

Score	Description
4	Response demonstrates a thorough understanding of technology used in modern society. Response contains three types of technology and explains how they make learning easier for students. Response contains no errors or omissions.
3	Response demonstrates a general understanding of technology used in modern society. Response contains one error or omission.
2	Response demonstrates a limited understanding of technology used in modern society. Response contains two errors or omissions.
1	Response demonstrates a minimal understanding of technology used in modern society. Response has one correct piece of information and contains several errors or omissions.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes

Sample responses include the following:

- Television gives children exposure to educational programming.
- The calculator makes mathematical calculations and functions easier to facilitate.
- The personal computer changed everything. It automated numerous functions from typing to information presentation and organization.
- Pencils and paper made it easier for students to express themselves and represent their learning.
- Use of the Internet in schools has improved access to information, speed, and ways of communication.
- Electronic whiteboards allow students to see a variety of instructional techniques and to interact with their learning environment.
- The DVD can hold hours of informational video and audio on a compact space. It makes access to visual media affordable and practical.

Example of Score Point 4

I believe that a calculator, the internet, and a personal computer all make it easier for students to learn. I think a calculator is easier because children can use it for math problems they don't know or have no experience on doing that type of problem. I believe the internet is easier because you can look up practically anything (altho it all may not be true). I think the personal computer is easier because it has internet, and you can make documents for extra credit and last but not least print so you can study easier. These are the things I think are easier.

Example of Score Point 3

- ① I select the Electronic whiteboard because your teacher can show you what you have to do and then you can do it.
- ② I select the Internet because the students can go on learning websites and learn new things.
- ③ I select the pencil and paper because the students can recheck their work.

Example of Score Point 2

A Calculator because it makes it so kids Don't
Have to math in their Head or on paper. A
Personal computer Because then they don't have to
Share or take turns. The Internet because
if they don't know something they can
look it up.

Example of Score Point 1

A calculator is helpful for math. The Internet has more information. A Electronic White Board is easier to show to students

Example of Score Point 0

The types of technology used in school is Electronic whiteboard personal computer the Internet calculator that's what we use for technology for school.

