



The South Carolina Academy of Science

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E Contest / M Contest

2021 South Carolina Academy of Science MAIL-IN CONTEST

Sponsored by the South Carolina Academy of Science

Get Additional Copies of the 2021 "MESAS" Contest at

https://sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/science_education/

Ref: 2021 South Carolina Academy of Science MESAS Mail-in Contest Grades 4 - 8

To: All of South Carolina: Please Share

Principals, Teachers; District Leaders; Parents and Students.

All Regions: Western Region I; Midlands Region II; Upstate Region III, Sandhills Region. IV; Low Country Region. V; Aiken Savannah River Region and, Sea Island Region VII (To all of South Carolina)

Please find enclosed information about the mail-in contest for the Middle/Elementary School Academy of Science (MESAS) sponsored by The Center for Science Education (CSE) at USC & South Carolina Academy of Science (SCAS), produced by faculty and staff at Universities & Colleges in South Carolina and members of SCAS.

I have attached two MESAS Contests for your students (one for grades 4-6 "E Contest" and one for grades 6-8 "M Contest"). Please make as many copies as you need and distribute to your students. I hope your students have fun and learn something by competing in the contest. *Each student who participates will be recognized and each school that participates will have at least one winner.* Winners will be announced in the SCJAS and SCAS newsletters and the SCAS Bulletin. The deadline for entry is **Monday, March 1, 2021**. The authors of the 2021 contest include Dr. Don Jordan and members of SCAS. We also have significant support from the Center for Science Education College of Arts & Sciences at UofSC.

We encourage students to use reference resources of all types, including the internet. However, we strongly discourage parent's assistance in finding the answers. This is a competitive contest meant to teach the children new methods of learning and exploring. We love the parent's involvement, but require the students find the answers on their own for this contest. Questions are prepared with respect to the standards for SC.

The South Carolina Academy of Science Annual Meeting will be held in the Spring at USC Aiken, Aiken SC. We hope to announce the winners of the SC Academy of Science MESAS Mail-in Contest by April 15, 2021

There will be lots of winners, not just one or two. *We recognized at least one winner at each school and sometimes at each grade level.* Certificates and prizes will be mailed out to each student's principal so that the awards can be presented at the school's Awards Assembly. We have four levels of winners: **School, Region, State, and Grand Winners.**

Results will be returned to Teachers/Parents/Principals. (See contest rules next page for more details)

We also encourage MESAS students to participate in their regional science fair in March/April of 2021. Check with your regional science fair director whose address can be found on the web at Center for Science Education site

Click [Here](#) to visit CSE Home, College of Arts and Sciences, University of South Carolina

Then click **Middle Elementary School Academy of Science'**

If you have questions, please call me at 803-777-7007 or better email djordan@sc.edu

Sincerely,

Don Jordan, USC
State Executive Director & Founder, MESAS

South Carolina Academy of Science

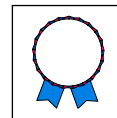
Rules for E (Grades 4 – 6) & M Contest (Grades 6 – 8)

Mail-In Contest

South Carolina Middle/Elementary School Academy of Science

2021 MAIL-IN CONTEST FOR SOUTH CAROLINA

Contest to be emailed to All Schools in South Carolina that contains
a grade 4, 5, 6, 7, or 8 in Early January 2021



Contest Rules for E & M Contest :

1. Mail your contest to:
Don Jordan, Executive Director SCAS/MESAS, Science Education Center, College of Arts & Sciences, Coker Life Science Building, CLS 108, 715 Sumter Street, c/o Biology Department, 4th Floor CLS, USC, Columbia SC, 29208; Phone (803) 777-7007.
Email: djordan@sc.edu (There is a \$5.00 entry fee for each contest)
2. **Entrants must complete all questions on entry form, sign, and mail entry and \$5.00 fee to:** SCAS MESAS CONTEST c/o Dr. Don Jordan of Arts & Sciences, Coker Life Science Building, CLS 108, 715 Sumter Street, c/o Biology Department, 4th Floor CLS, USC, Columbia SC, 29208;. **If the entrant AND sponsor do not sign this form, they cannot receive any possible award.**
3. **Deadline:** Entry must be postmarked by **Monday, March 1, 2021**. (note contest is emailed in early January 2021)
4. There will be lots of winners, not just one or two. Each school will have **at least one** winner and sometimes at each grade level..
5. A student can enter only **one** contest- either the MESAS E-Contest for grades 4-6 or the MESAS M-Contest for grades 6-8. (Students in the sixth grade have the option of choosing **either** the **E 4 - 6** or **M 6 - 8** contest.)
6. ***Everyone participating will be recognized.*** Teachers/Parents will collect the entries and mail as a package to the above address. Results will be returned to Teachers/Parents/Principals.
7. Prizes will vary in value. ***All winners at each level will be recognized or awarded prizes.***
8. In 2020 the contest scores were very good overall, and a good percentage of the entrants qualified for an award. We had **221 winners** out of 311 participants (**approx 71% of the total number of participants were winners**). Certificates and prizes will be mailed out to each student's principal so that the awards could be presented at each school's Awards Assembly. We congratulate each and every contestant for his or her excellent effort!
9. Awards are given in four categories: Grand, State, Regional and School Winners. A unique feature of the contest is that **every** school that participates is guaranteed at **least one winner**. The Grand Prizes went to 15 students (8 M and 7 E) from **four** regions who submitted the top overall papers.
10. Winners will be announced on the **Arts & Sciences, Center for Science Education web-site**. In addition, results will be published in the **SCJAS Newsletter in May/June**. Schools will be asked to announce winners at one of their assemblies for students. Winners will receive honors certificates from the S.C. Academy of Science.
11. Each student is held to the *code of ethics* for entry into this contest. **The use of resource materials is encouraged.** **Each student must work on his/her own** except for the group or team Activities as described in the contest. Group activities can include parents, friends, or classmates.

Student Signature

Sponsor (Teacher/Parent) Signature

{Teachers/Parents duplicate any parts of this test as needed. Check Center for Science Education CSE}

https://sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/science_education/

Click Middle Elementary School Academy of Science

Official E CONTEST Grades 4 - 6

Entry Form for SCAS MESAS Mail- In Contest

2021

(Whoever is mailing this form in should be considered the sponsor)

STUDENT'S HOME INFORMATION		SPONSOR'S INFORMATION
NAME		<u>NAME:</u>
ADDRESS		
CITY, STATE, ZIP		<u>WK. PHONE:</u>
AREA CODE/ PHONE #		
GRADE IN SCHOOL		<u>EMAIL:</u>
SPONSOR NAME		
STUDENT'S SIGNATURE (REQ'D)		

<u>SCHOOL INFORMATION</u>	
NAME of <u>SCHOOL</u>	
ADDRESS OF SCHOOL	
CITY, STATE ZIP	
AREA CODE/ PHONE #	
SCHOOL DISTRICT	
PRINCIPAL'S NAME	
SPONSOR'S SIGNATURE (REQ'D) *	

* If the parent is the sponsor then the parent signs

INSTRUCTIONS:

Failure to follow these instructions properly can lead to disqualification of the entrant's contest.

1. Print **CLEARLY** in the boxes above. Have your teacher, parent or legal guardian fill in the sponsor's information. Finally, ask your teacher/sponsor to fill in the school/teacher information.
2. Teachers/Parents duplicate any parts of this contest as needed: See https://sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/science_education/
This is the Center for Science Education Home Page, College of Arts and Sciences, UofSC
3. Place all answers to MESAS contest questions on the pages of the contest.
4. This contest is for **students ONLY**. We encourage their use of any and all resources available, including the internet. Adults supplying the answers take away from the spirit and goals of this contest: to allow children to find new ways of learning, and encouraging the use of various methods of research, especially the scientific method.
5. Attach and return all entry & rule forms **with** your completed contest and entry fee of \$5.00 per contest (see below) by **Monday, March 1, 2021**.
6. Mail to: **Dr. Don M. Jordan, USC / Center for Science Education / Coker Life Science Building, CLS 108
715 Sumter Street c/o Biol Dept. 4th Floor CLS / USC Columbia, SC 29208.**

SOUTH CAROLINA ACADEMY OF SCIENCE 2021 Mail-In Contest (E Contest, Grades 4–6)	Sponsor Email: _____ School: _____ Score: Total of _____, Out of 320 Points
Student Name: _____ Sponsor Name: _____	

All About Animals

(CIRCLE THE CORRECT ANSWER OR PLACE YOUR ANSWER IN THE SPACE PROVIDED: QUESTIONS 1-9 ARE WORTH 5 POINT EACH)



- Which is an invertebrate?
 A. jellyfish B. Tuna fish C. shark D. frog
- Which can escape its enemies by squirting a cloud of ink to hide behind?
 A. skunk B. pinfish C. octopus D. shrimp
- Which is the highest male voice?
 A. baritone B. bass C. tenor D. alto
- Who perfected the milk-purifying process called pasteurization? _____
- Your brain is part of your:
 A. circulatory system B. respiratory system C. nervous system D. ecosystem
- What is the most common mineral in your body?
 A. Calcium B. Potassium C. Iron D. Lead
- Which does not belong?
 A. ankle B. elbow C. ear D. knee
- How does coprolite help us determine if a dinosaur was a carnivore or herbivore? Ans below:

-
- Why did the beautiful Carolina Parakeet become extinct? Circle one answer below:
 (a) Hunters killed them for colorful feathers for ladies' hats. (b) Their habitat was destroyed by farmers. (c) Both (a) & (b) are true.
 Ans: _____

Take it in Stride: (Each question counts 10 points)

Use the template that came with this contest to make a 100-centimeter (cm) tape. Answer the following questions. **Circle** the correct answer or place your answer in the space provided.

- My 100-centimeter tape is equivalent to a 1 000 mm tape. 1. (a) YES True (b) No False

How to measure your stride

Although there are numerous ways to calculate your stride, the simplest way is to walk ten steps, measure the distance traveled, and divide that measurement by 10. Required tools include a metric measuring tape, chalk or other marking device, and a calculator. Please measure your stride using your 100-centimeter tape and answer the following questions.

- I have completed my 100-centimeter tape and the tape and I walked 10 steps and the distance I traveled was about 10 meters. 2. (a) YES True (b) No False
- I walked 10 steps and the distance I traveled was about 300 centimeters 3. (a) YES True (b) No False
- My stride is in the more than 0.5 m but less than 0.8 m. 4. (a) YES True (b) No False
- My stride is approximately _____ m (meter)

- Take your shoe off and measure the length of your foot.
 The length of my foot is about _____ mm (millimeter)

- Use the 100 cm tape to measure your height in centimeters. My name is _____
 "How tall are you in cm?". Answer: _____ cm. (centimeter) I am in Grade _____

All About Plants

(CIRCLE THE CORRECT ANSWER: EACH QUESTION IS WORTH 5 POINTS)

- Find the coniferous tree:
 - maple
 - dogwood
 - redtip
 - spruce
- Water evaporation from plant parts is called:
 - translocation
 - expiration
 - transpiration
 - tension
- Which comes first in plant reproduction?
 - fertilization
 - germination
 - pollination
 - hallucination
- During a long drought, my bathtub would barely drain out. The Rotor-Rooter man said my drainage pipe had been blocked by roots growing into it. This is an example of:
 - phototropism
 - geotropism
 - hydrotropism
 - skip tropism
- Cacti have successfully adapted to desert conditions by losing their:
 - roots
 - stems
 - leaves
 - flowers
- The nutrition of some plants depends on a root-fungus association known as a:
 - root nodule
 - mycorrhiza
 - root hair
 - root hypha
- Xylem and phloem are _____ tissues.
 - ground
 - vascular
 - dermal
 - both B and C
- Mesophyll consists of:
 - sieve cells and companion cells
 - photosynthetic cells
 - xylem and phloem
 - tracheids and vessels
- Most of the water and minerals that are taken up by a root enter the root via:
 - root hairs
 - the casparian strip
 - pericycle cells
 - endoermal cells
 - xylem tissue
- Leaves are attached to stems by petioles in areas called:
 - leaf tracheids
 - zones of maturation
 - casparian strips
 - nodes
 - meristems
- Which one of the following contains energy for a developing embryonic plant?
 - antipodals
 - endosperm formed from the polar nuclei
 - microspores
 - cambium
 - endodermis
- In the phloem, organic compounds flow through:
 - collenchyma cells
 - sieve tubes
 - vessels
 - tracheids
- Potassium (K) and Nitrogen (N) are _____ nutrients because they are necessary for plant growth and development in _____ quantities.
 - macro, large
 - trace, small
 - trace, large
 - macro, small
 - micro, small
- Both the olive branch and the dove are symbols of:
 - spring
 - peace
 - love
 - Arbor Day



Total of _____ Points out of a possible 65 points.

All About the Microbial World

(CIRCLE THE CORRECT ANSWER. EACH QUESTION IS WORTH 5 POINTS)

- A portion of a microbe that is used to immunize your body against infection is called a:
 - mushroom
 - vaccine
 - enzyme
 - solution
 - virus
- Which microbe is used to make bread rise?
 - mushroom
 - Smallpox
 - yeast
 - bread mold
 - polio virus
- Which group of organisms is most likely to make us sick?
 - Plants
 - Animals
 - Algae
 - Fungi
 - Bacteria
- Wine is produced by fermentation of grapes with yeast. To which of these groups does the yeast belong?
 - Animals
 - Plants
 - Fungi
 - Algae
 - Bacteria
- Flu is caused by the influenza microbe. This microbe belongs to the _____ family.
 - Algae
 - Plants
 - Fungi
 - Viruses
 - Bacteria
- Influenza epidemics are caused by the evolution of new types. These new types are called:
 - hybrids
 - strains
 - groups
 - evolutants
 - category
- Vaccines protect you from disease by stimulating your immune system. This stimulation leads to the production of proteins called:
 - enzymes
 - lipids
 - antibody
 - nucleic acid
 - hemoglobin
- Tetanus and Botulism are diseases caused by bacteria that produce a protein called (a):
 - Carbohydrate
 - Toxin
 - Keratin
 - collagen
 - cholesterol
- Microbes like bacteria and fungi play important roles in the environment. Which of these would not be an important positive role for microbes?
 - Decomposition
 - Recycling
 - Sewage Treatment
 - Disease
 - Clean up of oil spills
- A bacterial cell would be much smaller than a red blood cell. This would put it in the size range of:
 - 2 kilometers
 - 2 meters
 - 2 millimeters
 - 2 micrometers
 - 2 nanometers
- Microbes are used in the food industry and to produce industrial chemicals. Which of these would not fit in either of these categories?
 - Fungi used to produce Bread
 - Fungi used to produce Wine
 - Bacteria used to produce alcohols
 - Penicillium used to produce Blue Cheese
 - Algae producing a red tide
- Most microbes cannot be seen without the use of a microscope. They are too small to be seen with the naked eye. Which of these is large enough to be seen without the use of a microscope?
 - Smallpox virus
 - Mushroom
 - Polio virus
 - Bacteria
 - Amoeba



Total of _____ Points out of a possible 60 points.

**(CIRCLE THE CORRECT ANSWER & PLACE YOUR ANSWER IN THE SPACE PROVIDE:
EACH QUESTION IS WORTH 10 POINTS)**



Apollo 8 Mission

1. Which of the following Astronauts never walked on the Moon?

- (a) Neil Armstrong (b) Charles Duke
(c) Frank Borman (d) Alan B. Shepard (e) Charles "Pete" Conrad 1. Ans: _____

2. Apollo 8 was launch on what month, day, and year.

- (a) December 21, 1968 (b) December 24, 1968
(c) December 25, 1968 (d) December 26, 1968 (e) December 27, 1968 2. Ans: _____

3. Splash Down

The Apollo 8 astronauts returned to Earth on what month, day, and year.

- (a) December 21, 1968 (b) December 24, 1968
(c) December 25, 1968 (d) December 26, 1968 (e) December 27, 1968 3. Ans: _____

4. How many times did Apollo 8 circle the moon?

- (a) 2 (b) 4 (c) 6 (d) 8 (e) 10 4. Ans: _____

5. On Christmas Eve, December 24, 1968 on what was at the time the most watched TV broadcast, crew members (The first humans to travel to the Moon) Frank Borman, Jim Lovell and Bill Anders read a passage from *what book in the bible* as they orbited the Moon.

"For all the people back on Earth, the crew of Apollo 8 has a message that we would like to send to you."

- (a) John (b) Revelation (c) Genesis (d) Psalms (e) Proverbs 5. Ans: _____

6. The Crew members were named "Men of the Year" in what publication.

- (a) Time Magazine (b) New York Times (c) The Harvard Review
(d) Business (e) Science & Technology 6. Ans: _____

7. 1968 was an especially turbulent year in the United States.

How many of the following Statements are true?

(1) The Vietnam War was raging (2) Both Robert Kennedy and Martin Luther King Jr. were assassinated (3) Protests roiled the Democratic National Convention (4) At the end of 1968, when Apollo 8 splashed down, you saw *hippies hugging old men* in the streets. Something that was unthinkable just six days before that." (5) Frank Borman, mission commander, says there are a lot of parallels between 1968 and 2018, specifically how divided the country is — the anger, frustration, and mistrust. He wishes there were something on the horizon today like Apollo 8 to *bring people together*. During the six-day mission those things seemed to fade away as people were captivated by what they saw and heard.

- (a) 0 (b) 1 (c) 3 (d) 4 (e) all five are true 7. Ans: _____

8. There was also an unexpected moment during the 20 hours as Apollo 8 circled the moon. As they focused on the lunar surface below, something else caught the crew's attention. "Oh my God, look at that picture over there!" exclaimed Anders. What was the picture?

- (a) Picture of the Moon Surface (b) Picture of the backside of the moon
(c) The Earth Rise (d) The Sun (e) Mars 8. Ans: _____

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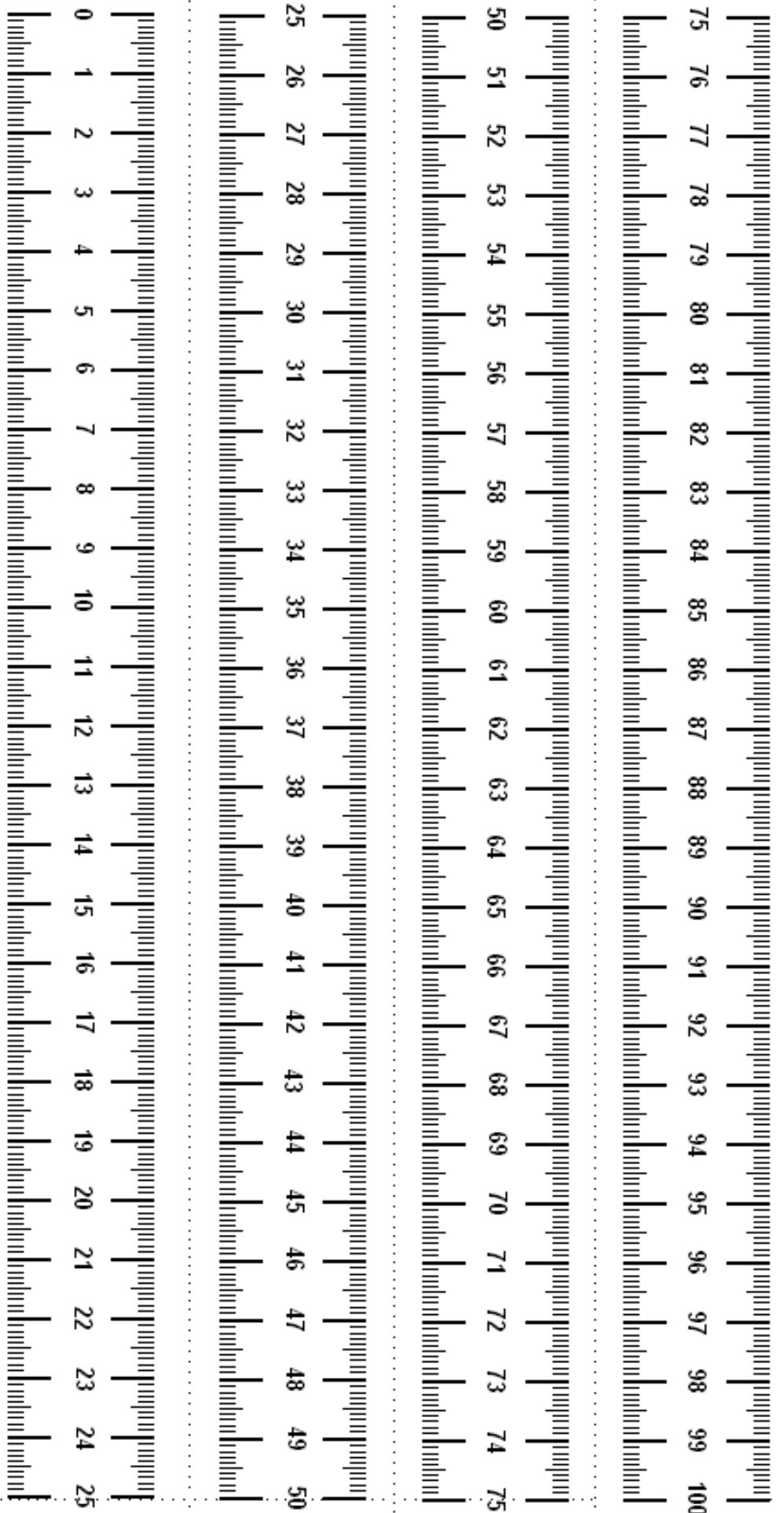
Measuring Tape

(cm, mm)

When Assembling
tape measure:

Cut along dotted lines

Line up and tape together
(overlap if necessary)



After Printing:

Measure this tape with a
metric ruler to see if
1 cm= 1 cm
{tape off 3 mm for
every 25 cm}