

January 16, 2017

E Contest

2017 MESAS MAIL-IN CONTEST
Sponsored by the South Carolina Academy of Science

*Get Additional Copies of the 2017 MESAS Contest at
<http://artsandsciences.sc.edu/cse>*

To: All of South Carolina:

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 South Carolina Academy of Science (SCAS) and produced by faculty and staff at the University of South Carolina & 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 **Wednesday, March 1, 2017**. The authors of the 2017 contest include Dr. Don Jordan, Sofia Chaluisant, Andrew Butler, Amber Atkinson, and Frank Jordan, USC and many members of SCAS, with support from the Center for Science Education.

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 a Saturday in the spring of 2017 at TBA, South Carolina. We hope to announce the winners of the SC Academy of Science MESAS Mail-in Contest by that date.

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 of 2017. Check with your regional science fair director whose address can be found on the web at www.scacadscience.org for specific dates.

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

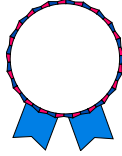
South Carolina Academy of Science E Contest

Mail-In Contest

South Carolina Middle/Elementary School Academy of Science

2017 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 2017



Contest Rules:

1. Mail your contest to:
Don Jordan, Executive Director SCAS/MESAS, Science Education Center, College of Arts & Sciences, Sumwalt Room 321, 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, Science Education Center, College of Arts & Sciences, Sumwalt Room 321, 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 **Wednesday, March 1, 2017**. (note contest is emailed in early January 2017)
4. There will be lots of winners, not just one or two. Each school will have *at least one* winner.
5. A student member of SCAS/MESAS 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. ***We recognized at least one winner at each school and sometimes at each grade level.*** We had **550 winners** out of 822 participants (**approx 66.95% of the total number of participants were winners**). Certificates and prizes were 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! Grand and State Winners and sometimes Regional Winners receive cash awards.
9. Winners will be announced on the **SCAS web-site, Arts & Sciences, Center for Science Education web-site and Bulletin**. In addition, results have been 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.
10. 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 (if any). Group activities can include parents, friends, or classmates.

Student Signature

Sponsor (Teacher/Parent) Signature

See www.artsandsciences.sc.edu/cse Under Programs (left side) then select MESAS for 2017 contest

Official E CONTEST Grades 4 - 6

Entry Form for SCAS MESAS Mail- In Contest

2017

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

STUDENT'S HOME INFORMATION		SPONSOR'S INFORMATION (see above)
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. However, they will still receive a certificate of recognition for entering.)*

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. You can find a copy (or extras, if needed) of the South Carolina Academy of Science MESAS Mail-In Contest at www.artsandsciences.sc.edu/cse/MESAS as well as dates and other important information.
3. Place all answers to MESAS test 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 (see below) by **Wednesday, March 1, 2017**.
6. Mail to: **Dr. Don M. Jordan, USC / Center for Science Education / Sumwalt Room 321 / Columbia, SC 29208**.



2017 MAIL-IN CONTEST
The E Contest MESAS GRADES 4 – 6

Student Name: _____

Sponsor: _____

Sponsor Email: _____

School: _____

Score: Total of _____, out of **190** Points.

Just for Fun!

(Each question is worth 5 points. **Circle** the correct answer and **Write** your answer in ink in the space provided.
(55 points total.)

1. What type of figurative language does the sentence below contain? Answer: _____
"Chug, chug, chug. Puff, puff, puff. Ding-dong, ding-dong. The little train rumbled over the tracks."

- (a) Simile (b) idiom (c) onomatopoeia (d) goosebumps

2. Choose the correct possessive noun: "The report card of the student" Answer: _____

- (a) The students' report card (b) The students report card (c) The student's report card
(d) The student report cards

3. HORIZONTAL is to VERTICAL as WARP is to _____

- (a) COUNT (b) PILE (c) WEAVE (d) SELVAGE (e) WOOF

4. What is the name of the layer of the atmosphere that is nearest to the Earth? Answer: _____

- (a) Troposphere (b) Stratosphere (c) Mesosphere (d) Thermosphere

5. What year was Nintendo founded? Answer: _____

- (a) 1977 (b) 1985 (c) 1991 (d) 1889

6. Which domain name is the website extension that identifies the site as a non-profit, non-government agency? Answer: _____

- (a) .org (b) .edu (c) .com (d) .gov

7. Your hair has a lifespan of around _____

- (a) 3 months (b) 6 months (c) 2 years (d) 5 Years (e) 10 years

8. In which hair phase does the follicle remains dormant anywhere from 1–4 months? Answer: _____

- (a) catagen phase (b) telogen phase (c) anagen phase (d) halogen phase

9. Which one of these animals does not hibernate? Answer: _____

- (a) Chipmunk (b) Beaver (c) Bat (d) Woodchuck (e) Bumblebee

10. Which of these fruits and vegetables floats in water? Answer: _____

- (a) Apples (b) Avocados (c) Banana (d) Mangoes (e) Potatoes

11. George Beauchamp invented the electric guitar in _____

- (a) 1931 (b) 1947 (c) 1960 (d) 1925

ELECTROMAGNETIC SPECTRUM AND WAVEFORM THEORY

(Each question/blank is worth 5 points. Please **Write** the correct answer in the space provided in ink)

1. Measured from crest to crest or trough to trough on a wave form, what is the name for the spatial period of a sine wave?

A. Frequency B. Period C. Amplitude D. Wavelength Answer: _____

2. The number of complete cycles of a waveform per unit of time is known as _____

A. Phase B. Frequency C. Amplitude D. Wavelength Answer: _____

3. Which part of the electromagnetic spectrum is between 10^4 and 10^{12} Hz and is used for long distance communication?

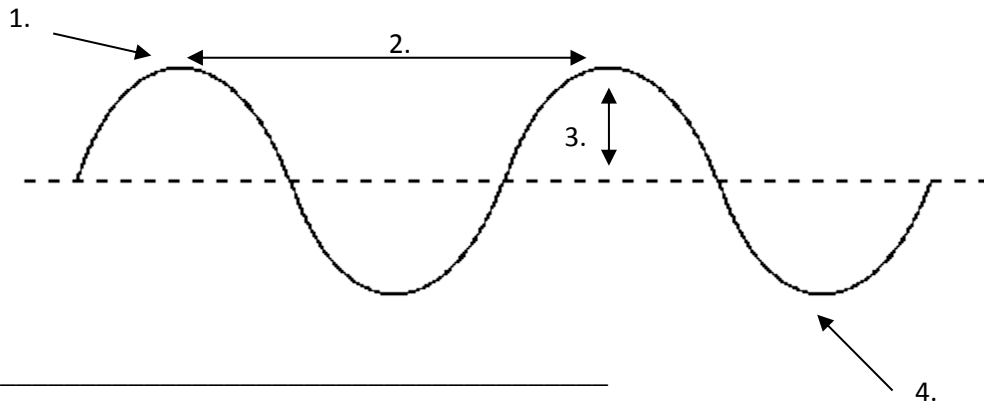
A. X-ray B. Gamma C. Infrared D. Radio Answer: _____

4. RADAR uses radio waves to determine bearing, range, and distance of an object by using radio waves, what does RADAR stand for?

Answer: _____

LABEL THE PARTS OF THE SINE WAVE

(Each question/blank is worth 5 points. Please **Write** the correct answer in the space provided in ink)



1. _____

2. _____

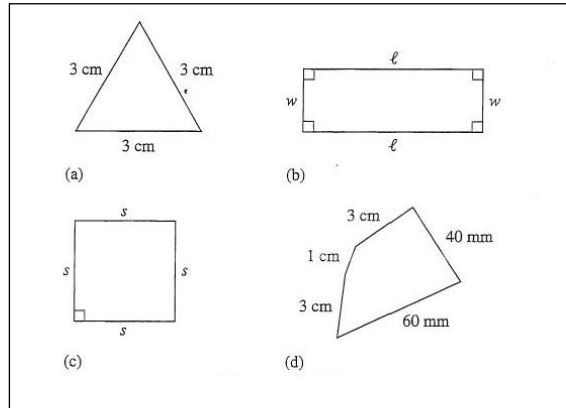
3. _____

4. _____

Geometry

Each question is worth 5 points. Please **Circle** the correct answer when you can and always **Write** the correct answer in the space provided in ink.

Find the Perimeter of each of the shapes below



1. The perimeter of the shape labeled (a) is _____

- (a) 9 cm (b) 17 cm (c) 6 cm (d) 27 cm

2. The perimeter of the shape labeled (b) is _____ (Write the formula)

3. The perimeter of the shape labeled (c) is _____ (Write the formula)

4. The perimeter of the shape labeled (d) is _____ (use the appropriate unit)

Triangle Inequality: The sum of the lengths of any two sides of a triangle is greater than the length of the third side.
Given that two sides of a triangle are 31 cm and 85 cm long and the measure of the third side must be a whole number expressed in centimeters.

5. What is the longest the third side can be? Answer: _____

- (a) 115 cm (b) 55 cm (c) 116 cm (d) 54 cm

6. What is the shortest the third side can be? Answer: _____

- (a) 115 cm (b) 55 cm (c) 116 cm (d) 54 cm

7. How many gallons of water does one inch of rain falling on one acre of ground equal?

Answer: _____ (round to the nearest whole number)

- (a) 8,357 gallons (b) 15,753 gallons (c) 27,154 gallons (d) 75,783 gallons

Hint: You need a dictionary; one acre is 1 chain by 1 furlong (how awkward) or 66 by 660 feet.
Drawing a 3 dimensional picture may help.

8. How many Liters, L of water does one centimeter of rain falling on one hectare of ground equal?

Answer: _____ Round to the nearest whole number.

Hint: one hectare = 100 m by 100 m = 10 000 m² = 1 000 000 dm² = 100 000 000 cm²

- (a) 100 000 000 L (b) 100 000 L (c) 3 785 L (d) 1 000 000 L

9. My Name is _____ and I am _____ cm tall.

Metric

(Answer the following Multiple Choice / Fill in the Blank Questions. (Each Question counts 5 points: **Circle** the multiple choice answers in Ink and **Write** the correct answer in the space provided when possible)

1. Which is larger atto, femto, yocto, zepto, or pico Answer: _____

- (a) atto (b) femto (c) pico (d) zepto (e) yocto

2. Which is smaller atto, femto, nano, zepto, or pico Answer: _____

- (a) atto (b) zepto (c) nano (d) femto (e) pico

3. 1 230 kL = _____ L

4. 1 kL of water at 4°C has a mass of _____ kg and therefore _____ t (metric ton)

- (a) 1000 kg or 1 t (b) 1 kg or 0.001 t (c) 1000 kg or 0.1 t
(d) 1 kg or 1000 t (e) none of these

5. 3.01 L of water has a volume of _____

- (a) 0.003 m³ (b) 0.00301 m³ (c) 0.0301 m³
(d) 3010 L (e) None of these

6. A conical drinking cup is 8 cm high and has a diameter of 6 cm. {Round to the nearest whole number} How many of the cups can be filled from a 2 liter bottle of cola? Answer: _____

- (a) 26 (b) 75 (c) 75.3982 (d) 13 (e) 24

7. Abigail must take 5 mL of medicine twice a day. If her bottle holds 4 dm³, how many days will her medicine last?

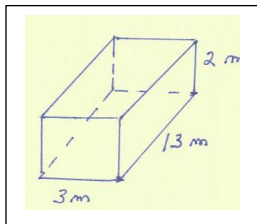
Answer: _____

- (a) 100 days (b) 200 days (c) 300 days (d) 400 days (e) None of these

8. A vitamin C tablet has a mass of 500 mg. That is the same as _____

- (a) 5 g (b) 0.05 g (c) 0.5 g (d) 0.5 kg Answer
(e) 5 cg

9. What is the mass (weight) of water in the container in the figure below? _____ g
Express your answer in grams



- (a) 100,000 g (b) 1,000 g (c) 7,800,000 g (d) 78,000 g (e) none of these

10. My Name is _____ and I mass (my weight) is _____ kg.