Zombie 17 Questions

Student signatures: __________________  Team Number ______
School Name ____________________

Road Scholar Practice Event - Zombie Bedtime Rhymes 17

To the Students: Welcome to Road Scholar!

You will need pens, pencils, ruler, protractor, and calculator. You may use any printed resources or measuring devices you brought with you. No computers are allowed. Any device capable of communication may not be used and must be turned off.

Your names, team name, and team number must be written both on this booklet and the answer sheets. You may write in this booklet for scrap, but your final answers must be written on the answer sheets provided. All questions and answer sheets must be returned in order.

Your answers must be complete – measurements must have units; town names must include state, province, or other appropriate identification.

If you are not certain as to what you should be doing, or if a question does not make sense to you, ask the event supervisors what to do.

Make sure you read the story line in italics. Some of the questions will not make sense without the story, so they will be harder to do.

Cautions: Avoid penalty points or disqualification!!!

Do not make any marks on any maps or station questions provided to you!
Start and stop working exactly when told to do so by the event supervisor.

Conversion factors:
Feet to meters = feet x 0.305  Meters to feet = meters x 3.281
Miles to kilometers = miles x 1.6090  Kilometers to miles= kilometers x 0.621

Map Use Notes:
If you are using the hard copy AAA map, follow the ***Use Map*** directions.

If using the mapscans of sections of the AAA map, follow the "Use Mapscan" directions.

Use either the hard copy AAA map or the mapscans included here. Don’t mix hard and scans for any measurements or calculations on the same question. Scans are not always exactly the same size as hard copy.
**Zombie Bedtime Rhymes**

It was a dark and stormy night. Outside, I could hear things moving around—moving slowly, groaning, dragging their feet. My mom came to tuck me in.

“Mommy, can I go to bed now? It’s been a long day and I’m really dead tired. But I can’t go to sleep. Could you read me a story?”

“Of course, my darling. Mommy will always be here to read you a story, because I love you. And of course you’re dead tired. Most of our family feels that way all the time—we are zombies, after all!”

“Here’s a book we can read together, Brendan. You know that a lot of our family just sort of walks around most of the time—they’re not really going anywhere special. But Mommy has to take a trip soon. And you’re growing so fast—if you’re very good I think you can come! We can travel from Port Angeles, WA to Rock Island, WA to visit Uncle Mortimer! Mortimer grows apples and runs an airport in Rock Island. If you’re very, very good maybe we can even see Aunt Yolanda down in Questa, NM! She runs a Molybdenum Mine. Mortimer and Yolanda are both experts on irrigation.”

“Shall we open the book? Just remember, this is an ABC book and every letter will ask you to make a rhyme. Are you ready to rhyme? Here goes!”

*Big A, little a, what begins with A?*
*Apples, like my uncle grows, and awful smells between my toes.*

“Very good, Brendan. That was a nice rhyme. Now let’s get out our **AAA Washington/Oregon Road Map**. Remember, the Western half of Washington State has water all over, raining and flowing---and the Eastern half is pretty much a desert! It’s quite remarkable”

***** Map Use****  Use AAA Washington Road Map *******

*Note: This map has latitude and longitude ticks marked in light blue along margins.*

1. “Brendan, let’s get our bearings. Washington is bordered on the West by the Pacific Ocean. What U.S. States and/or Canadian Provinces form its borders on the other three sides?” (*See Mapscan 2: Driving Distance Chart for ques 1*)

2. “Now, Brendan, remember our destination is Rock Island, WA. What are the AAA map grid references for Rock Island?” (*See Mapscan 7: Columbia River Area for ques 2*)

*Big B, little b, what begins with B?*
*Border lines and bright blue bays, where water flows in different ways.*

“Great grid references, Brendan! Mommy is so proud of you! We are going to start from right here in Port Angeles, WA. Let’s help your little friends find it—it’s at H-43, right on a nice body of water that forms a boundary between the US and Canada.”

3. What body of water separates the US and Canada at Port Angeles?  (*See Mapscan 1: Olympic Peninsula for ques 3*)
“Brendan, let’s take the ferry from Port Angeles up to Victoria, BC today!”

*** Map Change*** Use Toll Facilities Insert Chart on AAA Washington***
(See Mapscan 5: Toll facilities for ques 4)

4. What would the cost be for Brendan, who is five years old, to take the ferry from Port Angeles to Victoria? Just find the fare for Brendan—Mom can get her own ticket. They are not taking the car.

***** Map Change ***** Return to AAA Washington Road Map *******
(See Mapscan 1: Olympic Peninsula for ques 5 to 7)

Big C, little c, what begins with C?  
Candy canes and carrion, and coasts along the sea.

“Wow, mom—the snack stand on the ferry sure was selling some great finger food. Can we start driving to Uncle Mortimer’s now?”

“Sure, my darling. We’re going to leave Port Angeles and drive West along US 101. We can drive all the way to Forks, WA (I-40). A lot of our cousins live there—you know, the vampires? They sleep a lot during the day, but we’ll reach Forks just about twilight. It will be a beautiful drive!”

5. As she drives West from Port Angeles, how does mom know that US 101 will be especially pretty?

Big D, little d, what begins with D?  
Dead tired folks who walk around, and smell much worse than me!

In Forks I get to run around outside with my vampire cousins. We have a great time, but everyone there is hungry—they always want to go out for a bite.

6. What is the latitude at Forks, WA? Express your answer to the nearest tenth of a degree. Don’t forget North or South!

Port Angeles and Forks are both on the Olympic Peninsula. As we leave Forks and continue South on US 101, mom asks me to look at the map. “Brendan, you can see that the whole center of the Olympic Peninsula is made up of the Olympic National Park”, she says. Our vampire cousins love Forks because it rains a lot and the sun doesn’t shine much. That’s important if you’re a vampire! But there are some special areas within the Park where it rains even more than the rest.”

7. Within the dark green Olympic National Park, name two areas where it rains even more than the rest.

Big E, little e, what begins with E?  
Elves in the forest, walking around. Are they undead? They don’t make a sound!
We leave the Olympic Peninsula and drive to Seattle, WA to visit Uncle Michael. He works in the shipping business and he doesn’t mind sunlight. Just as we arrive, Michael is making a delivery. He is going to walk from the Westlake Center (shown by target in Northeast corner of map) to the Pike Place Market (B on the map) to deliver a “very special thing in a cooler”. He will pass a traffic light at every intersection.

8. What is the minimum number of lights that Michael will have to pass as he carries his package?

Michael tells us about the enormous container ships in Seattle Harbor. “Everything you can think of travels in these containers”. He will show us the ships later. “Some of the things we ship are very special--and very smart”, he says with a smile.

Michael continues: “Seattle is a great place to live— but of course, we do get a lot of earthquakes. And you can see Mount Rainier. Isn’t it beautiful? It’s a great big volcano! Nothing to worry about... I don’t think.....probably not.....”

Big F, little f, what begins with F?
Fracture zones, where earthquakes moan, and mountains smoke so close to home.
9. How high is Mt. Rainier? Express your answer in feet.

10. What geologic features are shown all around the summit of Mt Rainier?

11. Why must we visit Paradise in summer?

12. Why is it legal for a gambling casino to operate in Toppenish, WA even though gambling is not legal in the State of Washington?

13. We stop at the AAA office in Kennewick, WA (R-57 on insert map) to replace our worn out map. What intersection closest to the AAA office? Express as the intersection of ___ and ___.

14. We drive North from Pasco on US 395 all the way to Ritzville, WA (L-55).
14. What type of overnight accommodations does the AAA map show to be available at Ritzville, WA?

   *Big I, little i, what begins with I?*
   *Interstates and irrigation, both of which can help our nation!*

   The next morning we drive straight West on I-90. We enter at interchange 220 and get off at interchange 151.

   “Mommy, I know the AAA actually shows road mileage right on the map” I say—“just look at those little black diamonds at some of the intersections!”

15. What distance along I-90 does the map show for this trip?

16. We pass many hay fields along I-90. I-90 is remarkably straight along this stretch, as are most of the other roads in this area. What does the straightness of the roads suggest about the topography in this area?

   *Big J, little j, what begins with J?*
   *Jolly jockeys jumping horses, playing tag on bales of hay.*

(See Mapscans 4 and 7: Map Legend and Columbia River Area for ques 17-18)

   We leave I-90 at interchange 151 and drive to Rock Island, WA. Uncle Mortimer is there to greet us. “Welcome to Rock Island!”, he says. “Wenatchee and Rock Island are the apple capital of the world, and it’s all because of irrigation! At the airport, we have big warehouses where we fill containers with apples to ship them. We also store some very special, smart brains here—maybe Uncle Michael told you about them?”

   “The irrigation water comes from a series of dams along the Columbia. Look at the map and find the famous Grand Coulee dam at I-58. and the Rock Island Dam further downstream (South) at K-55. It isn’t that long a distance in a straight line, but the Columbia actually heads North after Grand Coulee, then West, then South again past Wenatchee to Rock island. It’s all right there on the map! There are three other dams just between Grand Coulee and Rock Island.

17. What is the straight line distance between the town of Grand Coulee and the town of Rock Island? Express your answer to the nearest whole kilometer.

18. Name the three dams on the Columbia between Grand Coulee and Rock Island Dam.

   “Your mom says you had a great time driving here” says Mortimer. “Next time you drive from Seattle, just drive straight to Wenatchee—it’s a lot faster!”

**** Map Change*** Use Driving Distance Insert Chart****
(See Mapscan 2: Driving Distance for ques 19)

19. Using the driving distance and time chart, exactly how long would it have taken to drive from Seattle to Wenatchee? You must pass through Everett and Skykomish. Express as: __ hours, __ minutes)

****** End of AAA Road Map Questions******
**Map Change** **Use USGS Questa, NM Quadrangle Map**

( Get this map on your screen- see instructions at start of this event)

Big K, little k, what begins with K?
Korporations are people too, but all the workers sure look blue!

“Brendan, you’ve been so very good that I think we can go down to Questa, NM to visit with Aunt Yolanda. She runs the Chevron Corporation’s Molybdenum Mine outside Questa. Molybdenum, or “Moly” for short, is a heavy metal. It is added to steel to make it stronger. Like many heavy metals it can be toxic, so Chevron employs mostly undead workers at the mine. No Obamacare for them!”

Mom enters the map area driving Northeast on NM 522—that’s a red line about halfway up the Western Edge or “neat line” on the map. I look over the map area and try to figure out where we are.

Big L, little l, what begins with L?
Longitude and latitude—the lines we know so well.

20. What is the contour interval of this map?

21. USGS maps cover an area designated by latitude and longitude rather than by miles. How many degrees, minutes and seconds of latitude are covered in this map area? Express as: _____°, _____’, ______”. (No “North” or “South” needed)

22. The Questa, NM map has a scale of 1:24,000. If two points are exactly 2 cm apart on the map, how far apart are they on the earth’s surface? Express your answer in whole meters.

Big M, little m, what begins with M?
Mountains, maps, molybdenum—I just love all of them!!

23. Most of the map area is composed of a mountain range that is also a protected area. Name both the mountain range and the protected national area.

Mom and I drive into Questa. We notice that the main part of town is all located in PLSS Section 31—that’s the red square with the red “31” in the middle. Aunt Yolanda lives right next to the “31”. We look out at St. Anthony Cemetery right next to her house. It’s early in the morning, and the zombie night shift is just coming home to the cemetery. They look dead tired.

“You can see the Spanish colonial heritage here”, says Yolanda. “See the Embergo Acequia? That’s a Spanish irrigation canal still in use after 500 years”.

24. Yolanda knows the map area is divided into nine Map Sectors. In which sector is downtown Questa located?
“Traditionally, Questa was a farming area.” says Yolanda. “Now most things are related to the mine. Just look West of my house at the Tailings Pond. It’s a big pond where wastewater from the mine sits, so that the soil in it can settle out. Pretty big, isn’t it?”

25. What is the maximum straight-line distance within the larger of the two tailings ponds? Express your answer in whole meters.

“The Ebergo Acequia diverts water from the Red River for irrigation. You can see the Red River flowing right across the whole map area—that’s the same Red River you hear about in Texas cowboy songs.”

Big N, little n, what begins with N?
Nice cool water grows our crops, ‘cause eating veggies is the tops!

Big O, little o, what begins with O?
Orlando’s name sure starts with that, and ends with it also.

With the Acequia, the Ponds, and the River we have to keep track of our water. With the Acequia, the Ponds, and the River we have to keep track of our water. Two miles East of Questa, in PLSS Section 33, you can see a Water Gaging Station on the Red River—it’s right next to our Questa School. The students check it every day.

26. If a sudden thunderstorm was to drop 7 cm of rain in the town of Questa, what changes would probably be recorded at the Water Gaging Station? It would___

A) go up 7 cm   B) go down 12 cm   C) go up 25 cm   D) not change

The Questa Water Gaging station is part of a large network. It’s important to know where it is.

Big P, little p, what begins with P?
Public Lands and parallels, the grids we love to see!

27. Using the Public Land Survey System, give the three part description of the Water Gaging Station’s location. Express as : Section ____, Town ____, Range____

28. Let’s get super accurate! Make that the five part location!
Express as ____ , ____ , Sec____, Town ____, Range ______

   “Brendan, schools are important. Before we go to the mine, drive North on US 522 up to Map Sector NW 1 and see Questa High School” Says Yolanda. “It’s right on the intersection of four PLSS sections. How high is the actual high school building, as marked on the map?”

29. What is the highest possible elevation at Questa High School building?

   Yolanda’s driver picks us up and we head toward the Moly Mine. “Aunt Yolanda,” I ask, “the Moly Mine is in the middle of a national forest. How can it operate?”

30. What does the grey shading in the mine area tell about the mine land?

   Near the Western edge of the grey mine area, I can see something strange. Right next to the “R” in “Forest” is a + mark. I wonder just where that mark is.
31. What is the exact latitude at this + mark? Express in degrees, minutes, and seconds. Don’t forget North or South!

We drive East on NM 38 and turn left onto the private mine road in PLSS Section 3. The driver does not say much; he just groans a bit now and then.

32. What material composes the surface of the mine road?

Big Q, little q, what begins with Q?
Quantities for grades and slopes. We’ll work them out ‘cause we’re not dopes!

As we turn on to the Mine Road, I see a warning sign. “Caution! 8% grade- trucks use low gear” says the sign. I can see that this is a twisty, turny road with switchbacks.

33. According to the grade sign, how many feet of roadway would be needed for the road to climb a vertical distance of 600 feet? Express in feet.

The huge open pit mine is shown on the map in pink, with no contour lines. I thought it would be all flat, but it’s not when I look at it. Yolanda explains why.

34. Why doesn’t USGS show contour lines in the mine area?

Big R, little r, what begins with R?
Roaring engines, hear them run—digging up molybdenum!

From the mine area I look to the South. Just below the Red River I can see Columbine Campground, and Columbine Creek flowing Northward through Map Sector SE9 to the Red River. Deer Creek enters the map area at its Eastern edge, just at the UTM 4057 mark, and flows West into Columbine Creek.

Yolanda’s zombies have just measured Deer Creek as 5276 feet long, and its elevation at the map edge is 9199 ft maximum. They sure are hard working zombies! Can you work hard too?

35. What is the stream gradient for Deer Creek from the Eastern Neat Line to Columbine Creek? Express as feet of drop per 1,000 feet of stream distance.

***** Map Change**** Use USGS Rock Island, WA Quadrangle Map****
( Get this map on your screen- see instructions at start of this event)

Visiting Aunt Yolanda sure was fun. There were so many zombies working and rhyming in Questa! It was like my favorite old Dr. Seuss books!

Big S, little s, what begins with S?
Seuss, the greatest bedtime rhymer. He’s not alive; he used up his timer.

As we fly to Rock Island, Yolanda and mom ask me about my school. “Mommy, I love school but my classmates are all humans. I feel so different! But they are smart-- they have good
brains, and they dress well. I can tell they have good taste. Could we have some of them over for dinner?"

“Darling, having them for dinner might be nice. But we’re not looking for humans with brains that have good taste. It more like we’re looking for humans with brains that taste good. Just read the map!”

**Big T, little t, what begins with T?**

*Twisty topographic lines- they taste as good as brains and spines!*

36. The Rock Island topo map covers the same degrees, minutes, and seconds of Longitude as the Questa topo. But even a human can see that the Rock Island map is much narrower than the Questa map. Why is this so?

37. In this map area, the Columbia River is marked as flowing Eastward. In Map Sector SW7, Mile 460 is also marked. What geographic feature would be found 460 miles away measured along the Columbia?

***Questions # 38 to 47.**** Use enlarged mapscan below of Airport in Rock Island to help locate story features. See notations. Use real USGS map for measurements.

Yolanda tells us about this area: “Remember the part about Eastern Washington being pretty much a desert? Here you are!” she says. “Without irrigation we couldn’t have orchards here”.

38. Not counting the irrigated orchards, what percentage of the map area is forested? A) less than 5% B) 10 to 20% C) 50-60% D) 90-100%
Big U, little u, what begins with U?
UTM--it's all metric and it's new, so learn it soon—it's good for you!

Yolanda pilots the plane as we approach the airport from the Southeast and line up with runway #2.

39. What Azimuth will we be using as we approach the runway?

40. Yolanda checks her compass. What is the magnetic declination at the center of the map area? Express as degrees East or West of true North.

41. Yolanda does some quick mental math—she's got a heck of a brain! What will her compass azimuth be after correcting for magnetic declination?

42. How long is runway #2? Express in meters.

43. What is the old fashioned compass bearing Yolanda would use if approaching on runway #1? (She is approaching from the South; ignore declination)

Big V, little v, what begins with V?
Vultures soaring high and free, and vampires staring straight at me.

Uncle Mortimer shows us a series of buildings that store airplanes, apples, and brains. The brains are kept refrigerated and are grouped according to how smart they are. “Just watch out for the Abnormal Brain Bank” says Mortimer. Take careful note of its location—don’t mess with an abnormal brain!

44. The Brain Building looks fairly new. Based on the map, what is the most recent year in which it could have been constructed?

***Questions 45 to 47: Use either Mapscan 10 Rock Island SW7 or full USGS Rock Island map.********

45. What is the latitude at the Abnormal Brain Bank at the Northeast corner of the Brain Building? Express as degrees, minutes, and seconds. Don’t forget North or South!

46. What is the longitude at the Abnormal Brain Bank at the Northeast corner of the Brain Building? Express as degrees, minutes, and seconds. Don’t forget East or West!

47. What is the UTM Easting value at the Abnormal Brain Bank at the Northeast corner of the Brain Building?

******Two Question Groups Remain in Zombie Bedtime Rhymes******
50-52: Profile drawing problem (on answer sheet, page 4)
53-55: Map drawing problem (on answer sheet, page 5)
Questions # 48 and 49: Satellite Images: Container Ships in Seattle Harbor
Images courtesy of [www.mapquest.com](http://www.mapquest.com)

Big W, little w, what begins with W?
Working cranes and wiggling brains, and other things that interest you.

The satellite images show cranes loading containers onto two different ships in Seattle Harbor. Uncle Michael says most of the containers are filled with Apples from Uncle Mortimer’s Orchards in Wenatchee and Rock Island. Some of the “very special containers”, however, contain brains.

48. Based on the activity shown in the images, which ship will be loaded at a faster rate—the one on the left or the right? Why do you think so?

49. Using a scale of 1:3000, how long is the ship on the left? Express to the nearest whole meter.

** ****Two Question Groups Remain in Zombie Bedtime Rhymes*******

50-52: Profile drawing problem (on answer sheet, page 4)
53-55: Map drawing problem (on answer sheet, page 5)