

**Holt Invitational Road Scholar 2018 - Road Map Test**  
Answer Key

1. Romulus
2. Detroit Industrial Expressway
3. North Terminal and 4. Mc Namara Terminal
5. Michigan Avenue
6. State Highway
7. West
8. Wayne County and 9. Oakland County
10. Maybury State Park
11. Picnicking, 12. Flush Toilets and 13. Hiking
14. 211
15. Pontiac Trail
16. M-36
17. Whitmore
18. Livingston
19. exit 67
- \*20. carpool lot
21. 55 Mile per Hour (or 55 mph)
- \*22. Bishop International Airport
23. I-75
24. 155 (exit# 155)
25. 24 (miles)
26. 228
27. Mackinac
- \*28. 55

- 29. H-40
- 30. Whitefish Point
- 31. Moose
- 32. Chippewa
- 33. Sault Ste Marie
- 34. commercial
- 35. Superior
- 36. Michigan
- 37. MI-94
- 38. Merwin Creek
- 39. 249
- 40. US-127

\* are Tie Breaker Questions

Use the satellite map of Detroit Downtown to answer.

- 41. Grand Circus Park Garage
- 42. Campus Maritius Park
- 43. Woodward Avenue

**Use the Topographic map Fig 2.1 for the next set of questions (#s 1 thru 20)**

**From our home state of Great Lakes, we are set out to visit our name-sake City situated in a neighboring state south of us. You guessed it correct - it is Michigan City Indiana.**

1. (3 pts) Magnetic declination is the angular difference between the **Magnetic North** and **True North** at the point of observation. What does the marking 'GN' stand for? **'Grid North'**
2. (2 pts) What is the magnetic declination for the Michigan City Quadrangle? What is the direction of this declination?
  - a. **4 Deg 20 mins 0 sec (or 4 Deg 20' acceptable) (1 point)**
  - b. **'-ve or 'negative' or Westerly declination (1 point)**
3. When was this magnetic declination observed? - **2016**

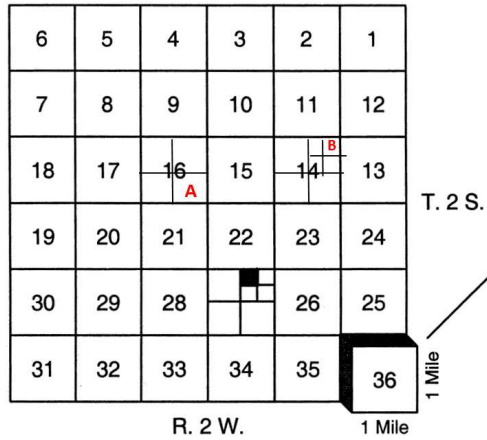
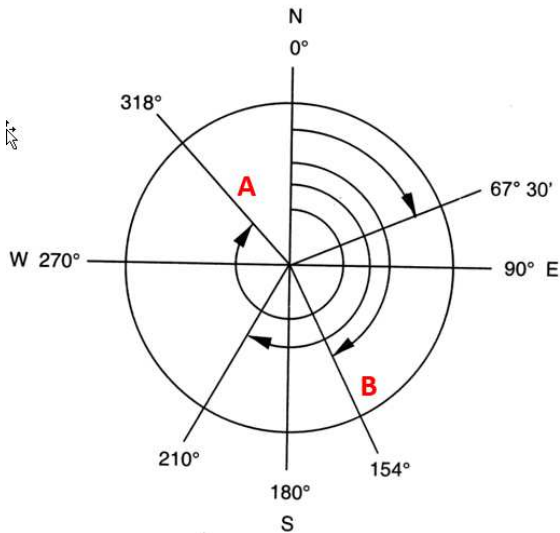
4. Once observed and recorded Magnetic declination of a location never changes. Is this True or False ? **False**
5. Which UTM Zone does this Michigan City Quad belong to? (Refer Fig 2.2)  
**(Zone 16 or 16T acceptable)**
6. (2 points) Which UTM Zone(s) does your home state belong to? (Refer Fig 2.2)  
**Zone 16 ( 1 point)**  
**Zone 17 ( 1 point)**
7. (2 pts) Name a creek that has its mouth ('flows into') in Lake Michigan. What is its stream direction? **Trail Creek ( 1 point ), North or Northwest (acceptable) (1 point)**
8. What is the tallest elevation of this area, adjoining the above creek from question #7?  
**700 feet (1 point)**
9. (4 pts) Compute the change in elevation between the tallest point (Question #8 above) and this creek. Compute the 'Slope gradient' from this tallest point to this creek where it crosses the traditional West Michigan Street (US Route 12 ). Write your slope gradient with the relevant units. Showing calculation gives you some credit.  
**110 feet (1 point) (arrived by 700 feet - 590 feet)**  
**0.73 feet per 100 feet (3 points)**  
**( +/- 0.25 feet is allowed owing to measurement errors)**  
**(do not give full 3 points if 'per 100 feet' is not mentioned and / or the unit feet is not mentioned)**
10. How many graticule marks can you find on this Quad map? **Four or 4**
11. (2 pts) List the Geo Coordinates of the south east and north west graticule marks  
**South East graticule mark - 41deg 40' 0" N, 86deg 55'0"W**  
**North West mark graticule - 41deg 42' 30" N, 86deg 57'30"W**
12. Which national park is located on the north western sector of this Quad ?  
**Indiana Dunes National Lakeshore**
13. (2 pts) Name the Quadrangle that adjoins the northern boundary of this Michigan City Quad? Which adjoining Quad is situated on the north east boundary?  
**Lake Michigan (1 point) (hint: More than 15% of this Quad is filled with water!)**  
**New Buffalo West (1 point)**
14. Locate the landform that is roughly on the east of US route 421 and at the 41 deg 40 min 0 sec N latitude **Keiffer Gruenke Ditch**

15. Name the river that flows through this Quad and name the county where this river flows mostly in? **East Little Arm Calumet River**
16. Which county does Michigan city belong to? **La Porte County**
17. Spot the hill just south of the only Interstate Highway that runs through the Quad. What is the highest elevation of this hill? **750 feet**
18. This is not the tallest point (elevation) of this Michigan City Quad?. Answer 'Yes' or 'No'. **No**
19. Which sector of the Quad does this hill belong to? **Sector 9 or South East Sector**
20. (2 pts) Calculate the Azimuth and Bearing of lines 'A' & 'B' from Fig 2-3 with proper units / notation  
**A - Azimuth = 318 deg, Bearing = N 42 deg N W (1 point)**  
**B - Azimuth = 154 deg, Bearing = S 26 deg E (1 point)**

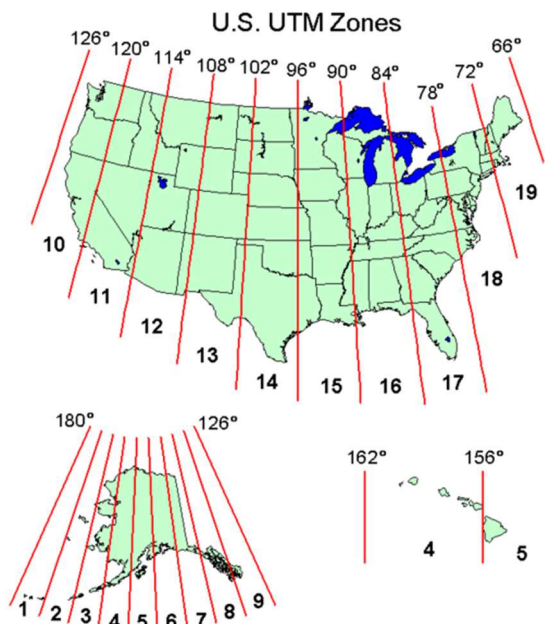
For the next set of questions use the Fig 3-1 named as PLSS Grid. A PLSS surveyor meets you the 'Road scholar' and asks you the following:

21. What geometric shape are the PLSS surveys and grids typically drawn as ?  
**Rectangular**
22. Name the location / points using which as a reference; all the PLSS grids were marked throughout the country?  
**Initial Points**
23. (2 pts) Which imaginary lines run parallel to the Latitudes in a PLSS grid system? Name both the names for them.  
**Township Lines (1 point)**  
**Baselines (1 point)**
24. Which are the lines that run parallel to the Principal Meridians in a PLSS Grid?  
**Range Lines**
25. Using the standard PLSS system of notation write down the coordinates of sections marked as 'A' and 'B' from the Fig 3-1 - PLSS Grid
- A **SE ¼, Sec 16, T 2 S, R 2 W** (2 points)
  - B **NE ¼, NE ¼, Sec 14, T 2 S, R 2 W** (3 points)
26. What is the typical area of a township per the PLSS guidelines?  
**36 Square Miles**

**Fig 2-3 Azimuths & Bearings**



**Fig 3-1 PLSS Grid**



**Fig 2-2 UTM Zones of the US**

1. B 2.D 3.a,c 4. C 5.C 6.B,C 7.A 8.B 9. A 10. D

\*\*\*\*\* END OF TEST \*\*\*\*\*