

**To Catch a Thief**

Name: \_\_\_\_\_

Maps used in this competition:

Codes used in this competition:

- HM** – Rand-McNally MI Highway Map
- N** – Negaunee SW Quadrangle
- O** – Omer SW Quadrangle
- P** – Pinckney Quadrangle

- D&V I** – Detroit and Vicinity Inset
- M** = State Highway Routes as in M-36
- US** = US Highway Routes as in US-23
- I** = Interstate Routes as in I-75

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

25. \_\_\_\_\_
26. \_\_\_\_\_
27. \_\_\_\_\_
28. \_\_\_\_\_
29. \_\_\_\_\_
30. \_\_\_\_\_
31. \_\_\_\_\_
32. \_\_\_\_\_
33. \_\_\_\_\_
34. \_\_\_\_\_
35. \_\_\_\_\_
36. \_\_\_\_\_
37. \_\_\_\_\_
38. \_\_\_\_\_
39. \_\_\_\_\_
40. \_\_\_\_\_
41. \_\_\_\_\_
42. \_\_\_\_\_
43. \_\_\_\_\_
44. \_\_\_\_\_
45. \_\_\_\_\_

For copies of the corresponding maps for this unit plus two other units, visit:

<http://www.otherworlds-edu.com>

“To Catch a Thief”

Maps used in this competition:

Codes used in this competition:

**HM** – Rand-McNally MI Highway Map  
**N** – Negaunee SW Quadrangle  
**O** – Omer SW Quadrangle  
**P** – Pinckney Quadrangle

**D&V I** – Detroit and Vicinity Inset  
**M** = State Highway Routes as in M-36  
**US** = US Highway Routes as in US-23  
**I** = Interstate Routes as in I-75

Howard Billings was a very successful California businessman whose home was on Malibu Beach. Friends and associates considered Howard as being a very brilliant scholar and individual. But as brilliant as he might be, Howard often acted foolishly. This was especially true for his actions on June 14, 2001.

Two weeks earlier, Howard had decided to have his very large, flawless, emerald cut diamond, purchased in Antwerp, Belgium, modified into a necklace. He had taken the diamond to the finest jewelry store in Beverly Hills where they were to place it into a magnificent white gold setting. The necklace was worth well over \$2,000,000.00.

While the necklace was under construction, Roxy Artist, one of the store clerks, devised a plan to steal it. Her boyfriend, Jimmy Scam, could help her with the theft, and he also knew how to fence it.

The night before Howard was to pick up his necklace, Roxy and Jimmy met over dinner at a Denny’s close to the jewelry store. They decided against stealing the necklace from the store because they couldn’t crack the safe. They didn’t want to break into Howard’s home because they knew he had had a state of the art security system installed. It seemed best to steal the necklace while Howard was transporting it from the store to his house.

Unknown to Roxy, Jill Dorigth, seated in the adjacent booth, overheard the entire conversation. Jill also worked at the jewelry store and had come to dislike Roxy with a passion. She was not about to permit Roxy and Jimmy to steal Howard’s necklace.

The next day, as Howard was picking up the necklace, Jill slipped him a note informing him that Roxy, who had called in sick that morning, and her friend were planning on mugging him on his way home.

Howard left the jewelry store with the necklace and walked to a nearby Office Depot where he purchased brown wrapping paper, scissors, and tape. He then walked next door to a bookstore to purchase a large, thick book. He then located a secure corner where he cut a small cavity into the center of his newly acquired book, placed the necklace into the cavity, and taped it shut. He then went to a

packaging store to have the package insured and shipped via overnight express to his cousin.

Two blocks away, Roxy and Jimmy sat nervously waiting in their car, watching for Howard to return to his Lincoln Town Car. When he finally came into view, they highly suspected that Howard no longer had the necklace.

Since Roxy had called in sick for work that morning, she deemed it unwise to be seen. It was Jimmy who went to the jewelry store to determine whether Howard had indeed picked up the necklace, and discovered that he had. He decided to check with the other stores on the block as well. It was while in the fifth store he visited that he discovered Howard had arranged to have the package shipped.

Returning to his car, Jimmy discussed the available options with Roxy. They both decided that they had no choice but to tap Howard's phone. Tapping phone conversations was one of Jimmy's more dubious specialties.

The next day Howard attempted to call his nephew, Jake Rye, with whom he hadn't been in touch for several years. He wanted Jake to be aware that a package having a rather high monetary value had been scheduled to arrive at his door the very next day. The number he had tried to call was in Negaunee, Michigan. To his dismay, a voice message informed him that that number had been disconnected.

\* \* \* \* \*

Jake had grown up in Negaunee where he had lived with his widowed mother, Helen, until three years earlier when he had decided to move to Sterling Heights. Helen had become lonely, sold the house, and moved to Omer to be near her sister. She had made the move just a week prior to the date the package was to be delivered.

By sheer coincidence, Jake had attempted to call Howard the very same day that Howard had tried to call him in Negaunee. Jake wanted to give Howard both Helen's and his new addresses and telephone numbers. Howard realized how foolish he had been and told Jake about the necklace in the book. He shared his concerns about a ruthless pair of thugs planning to steal the contents of the package.

Unfortunately for Howard, Roxy and Jimmy had monitored the entire phone conversation and now knew all the details. They immediately left for the airport.

\* \* \* \* \*

When Jake had called Howard, he had had guests in his home. His fiancée, Becky, and their closest friends, Stu and Robin, were sipping Pepsi in the family

room. After Jake had told them the story, they all decided to travel to Negaunee in Jake's new Ford Explorer. They left Sterling Heights at about 5:00 PM.

Becky, a geographer by profession, was preparing a workshop on topographic map reading for the Geographic Alliance. She had numerous Michigan topographic maps in her car. Since she planned to review her presentation during the long ride to Negaunee, she transferred her maps to the Ford Explorer.

Seated in the rear of the Ford Explorer next to Becky and surrounded by maps, Robin asked, "Jake, do you have a Michigan State Highway Map?"

"Yes. I placed a Michigan map in the glove compartment just yesterday," Jake replied. But I won't need it. I've lived in Michigan my entire life and know the state like the back of my hand."

"I know, but I'd like to see it anyway. I'm fairly new to Michigan, you know."

Stu searched the glove compartment until he had found the map. He handed the map to Robin who immediately unfolded it and attempted to find their current position. She realized that she would be much better off were she to use the "Detroit and Vicinity Inset" on the flip side of the map. Jake had just turned left off Mound Road north of Sterling Heights (DH-2) and was now traveling west on M-59.

"Are any of you aware that M-59 (west of Sterling Heights) is also called **1 D&V I** Road?" Robin asked. No one responded.

As they crossed Dequindre, Robin said, "We just left Macomb County and are now in **2 HM** County."

They turned north on I-75 (BR-75) from M-59 at interchange number **3 D&V I** in the city of **4 D&V I**. Robin discovered that they were now out of the Detroit and Vicinity Inset boundaries, so she flipped the map to the other side so she could follow along on the state highway map.

"I can't wait to cross the Mackinac Bridge," said Robin enthusiastically. "Why is the road over the bridge colored green?"

Becky chuckled before she replied, "That's because the bridge is a **5 HM**."

By the time they had reached the bridge, it was 9:00 PM, so they crossed over to St. Ignace, had dinner, and spent the night at a motel. While dining, Robin informed the group that, according to the mileage chart, they had traveled **6 HM** miles from Detroit to St. Ignace.

The next morning during Breakfast, Robin informed the group that the Mackinac Bridge crossed the Straits of Mackinac.

“Did you know that the Straits connect Lake Huron with Lake 7 HM?” Robin asked.

“I believe everyone is aware of that, Robin,” replied Jake. “We’re all from Michigan, you know.”

After breakfast, they hopped into the Ford Explorer and continued northward on I-75.

Becky asked Robin for the highway map, looked at it for a few moments, and informed her friends that St. Ignace was located in Q-6 on the map grid. She then used the grid system to find that Negaunee was located in 8 HM.

As if on a roll, Becky took out a protractor and ruler to determine the azimuth from St. Ignace to Negaunee which she found to be 9 HM. She then said, “Too bad we can’t get to Negaunee by following the azimuth as that would be a much shorter distance.

With a chuckle, Stu said, “We could if we had wings, but since we don’t I guess we’ll just have to continue by road.” He then added, “By the way, how would you state that azimuth as a bearing?”

“Luckily I know how to calculate bearings. The bearing would be 10 HM.”

In a more serious tone, Stu asked, “How far is it from St. Ignace to Negaunee?”

“It is 11 HM miles from St. Ignace to Marquette,” Robin replied. “And, in the right hand margin of the Negaunee SW Quad, it states that the distance from Negaunee to Marquette is 12 N. So, the total distance must be 175 miles.”

They arrived in Negaunee just before 10:00 AM, and Jake drove directly to the old family home. He had never met the new owners, Maude and Henry Stout. When Maude answered the door, he introduced himself and asked whether a package, addressed to him, had arrived. Maude said that it had, but not knowing his address and thinking that the package was important, she had rewrapped, addressed it, and shipped it to Helen. Henry had taken the package with him when he went fishing. He planned on shipping the package on his way home. He was fishing at the spillway on Deer Lake. His favorite fishing spot was at the end of an unimproved dirt road.

As they climbed back into the Ford Explorer, Jake informed the group that he knew the way to the spillway. Becky and Robin sat in the back and continued

studying the Negaunee SW Quad. Becky thought this might be a perfect time to give Robin a quick lesson in reading topographic maps.

“Look, here we are on this road which goes around the southern and western shores of Deer Lake (sector 8). It is a/an **13 N** (a. heavy; b. medium; c. light) – duty road. When we head NE away from Deer Lake for a short distance, we will turn right onto a/an **14 N** dirt road that will take us to the spillway. The spillway is where the **15 N** River flows out of Deer Lake.”

“How do you know that it flows out of Deer Lake instead of into it?”

“Follow the river away from Deer Lake, and you will find a brown contour line (S  $\frac{1}{2}$  / SW  $\frac{1}{4}$  / 23 / T48N-R27W). The contour forms a V-shape as it crosses the river. The bottom of the V points upstream like an arrow. The value of the contour is **16 N** and it is a/an **17 N** (a. index; b. intermediate; c. supplementary) contour line. I can determine the elevation of the contour line by using a marked index contour and checking the contour interval at the bottom of the quad. The value of the contour interval on the Negaunee SW quad is **18 N**.”

“What’s that black cross about 0.5 miles north of the spillway?” Robin asked.

“It’s called a graticule tick mark,” Becky explained. “There are **19 N** (a. 2; b. 4; c. 6; d. 8) of them on every topographic map. Each one has specific coordinates. The one just north of the spillway is in a **20 N** (a. wooded marsh; b. swamp; c. submerged marsh; d. vineyard), and is the **21 N** (a. NW; b. NE; c. SE; d. SW) graticule. Its coordinates are **22 N** N. latitude and **23 N** W. longitude.”

When they arrived at the spillway, they found only one fisherman. Jake introduced himself and asked the fisherman if his name was Henry. His reply was “Yes.” Jake then explained the situation, and inquired about the package.

Henry told them that he had run into Leon, whom Jake knew, at the café, and said Leon was on his way to Pinckney for a friend’s wedding. Leon, who was in love with Helen, said that he would gladly deliver the package to Omer on his way to Pinckney. It would be an excuse for him to see Helen. Henry had given the package to Leon.

“If we travel from the spillway directly to the SW corner of Negaunee City Boundary (where sections 34 and 35 / T48N-R27W and sections 2 and 3 / T47N-R27W meet), we would have to travel only **24 N** miles at an azimuth of **25 N** degrees. We would be almost on M-28, which is also US-41. We would save all kinds of time,” Becky told the others.

“Stop doing that!” Jake said with a laugh. “We’re not soaring birds, you know. We will just have to drive around Deer Lake to get back to Negaunee. We’ll stop for gas and then leave for Omer.”

\* \* \* \* \*

Roxy and Jimmy finally arrived in Marquette at 11:00 AM. Their flight from Los Angeles to Chicago had been uneventful, but getting from Chicago to Marquette had been a drag. The plane had taken off at 7:00 AM, but had made stops in Kenosha, Milwaukee, Green Bay, and Menominee before landing in Marquette.

They rented the only car available – a slightly rusty, white 1996 Mustang – and left for Negaunee. Arriving in town, they soon found someone to direct them to the Rye family home.

When Maude answered the door, Roxy and Jimmy introduced themselves as F.B.I. agents. They informed her that the package she had mistakenly received contained a book they required as evidence for a case on which they were working. Just then, Henry returned from fishing. He told Roxy and Jimmy that the package was on its way to Jake's mother in Omer. Maude gave them Helen's address, and the pair left immediately for Omer.

\* \* \* \* \*

Jake made good time on I-75, and by 3:00 PM they were approaching Grayling (R-11 on the state highway map). At exit number 264, Stu said, "I think there is a state park on our left."

"Yes, you're right. The **26 HM** Pines State Park is just east of I-75," Robin replied.

"I wonder if the regulations permit swimming at the park."

"According to the 'State Park and Recreation Areas' chart on the flip side of the highway map, the answer is **27 HM** (a. yes; b. no; c. only during the peak season)."

When they reached exit 190, Jake turned east off of I-75 onto M-61. Three miles later, he turned NE on US-23.

"How many people live in Omer?" Stu asked.

"The map states the population as **28 HM**," Robin told him.

Looking at the Omer SW Quad, Becky said, "US-23 is straight as an arrow in sectors 8 and 9. From the bottom neat line to the east neat line, the azimuth is **29 Q** degrees."

"I've forgotten my mother's address, but for some reason I remember that the legal land description of her house is SW ¼ / SW ¼ / 20 / T19N-R5E."

“Found it!” Becky proclaimed. “Turn left off of US-23 onto Hull Road (sector 9 on the Omer Quad). In less than 0.5 miles we will come to Conrad Road. Turn right, and it will be the first house on the left.”

“How did you do that?” Robin asked.

Becky explained the Public Land Survey System (PLSS) to Robin. When she had finished, she decided to quiz her. “Robin, state the PLSS for the Assembly of God Church in sector 9.”

“Let’s see. The legal land description is 30 O.”

“Very good,” Becky said with a smile.

Turning right onto Conrad Road, Jake crossed Saverine Creek which was a 31 O (a. perennial; b. intermittent) stream. Just beyond the stream was his mother’s house.

On the map, Becky spotted an intermediate contour between Saverine Creek and Helen’s house. Its value was 32 O feet.

Approaching the house, Helen ran out to welcome her son and his friends. Jake took a moment to introduce his mother to Robin and Stu. Helen and Becky had been friends for a very long time.

Jake asked his mother if Leon had visited, and if he had given her a package. She replied that Leon had been there and had mentioned a package. Before he had given it to her, however, he had glanced at his watch and had hastily departed. He said that he had to get to Pinckney. It wouldn’t do for the best man to be late for the wedding. He had gone without giving her the package.

After a short visit, Jake and his friends excused themselves so they could leave for Pinckney. Jake promised Helen that he would call her and tell her the entire story.

\* \* \* \* \*

Roxy and Jimmy arrived at Helen’s door about fifteen minutes after Jake and company had gone. This time, Jimmy introduced themselves as C.I.A. agents searching for Leon. According to them, Leon had inadvertently acquired a book containing confidential plans for construction of a neutron bomb. Jimmy said that although Leon didn’t know it, he was in extreme danger. The agents wanted the book, and they wanted to save Leon.

Having been told very little by Jake, Helen informed the phony agents that Leon still had the package and that he had left for a wedding in Pinckney. She also



mentioned that her son and his friends had been here, and had followed Leon in Jake's Explorer.

Thanking Helen for the information, Roxy and Jimmy jumped into their car and sped off. Helen wondered why C.I.A. agents would be driving a 1996 Mustang, but she decided they probably wished to maintain a low profile.

As they left Omer, Jimmy asked, "What's a Pinckney?"

"It's a town," Roxy replied.

"How do we get there?"

"Stay on south US-23. In a few miles it will become US-23 and I-75. Near the airport in **33 HM** (city), they well separate. Stay on US-23. I-75 goes to Detroit, and we don't want to go there. In about 30 miles, we will cross I-96. From I-96 to M-36, which is the road to Pinckney, it is **34 HM** miles to M-36 which will take us right into town."

"Is Pinckney near Ann Arbor?"

"Ann Arbor is about 20 miles **35 HM** (a. NW; b. NE; c. SW; d. SE) of Pinckney."

Back in Negaunee, Maude had decided that something seemed fishy about the couple claiming to be F.B.I. agents. She called Helen to express her concern.

Helen already had a funny feeling about the C.I.A. agents, and when Maude shared her story about the F.B.I. agents, she quickly called Jake's cell phone. She told Jake about the couple and gave him a description of their car.

\* \* \* \* \*

When Jake and his party arrived in Pinckney (sectors 2 and 5 on the Pinckney Quad), they noticed that the streets were practically empty. They stopped for fuel and information. The attendant told them that nearly everyone in town was at the observatory for the wedding.

In the car, Becky quickly found the observatory on the Pinckney Quad. It was in sector 8, next to a bench mark displaying an elevation of **36 P** feet.

"The observatory is actually higher than the bench mark," Becky told Robin. "The observatory is **37 P** feet above sea level."

"What would you do if we entered an area off this quad map?" Stu asked.

“The names of all the adjoining quads are given in the “Adjoining 7.5’ Quad Names” chart located at the bottom of the quad. If we crossed the south neat line, with latitude of **38 P**, we would be on the **39 P** Quad.”

They left town traveling south on Pinckney Road. Two and one half miles later, they crossed a bridge.

“Jake asked, “Is this the same lake on both sides of the bridge?”

“No, the one on the left is Portage Lake; the one on the right is **40 P**. The surface of the water is **41 P** feet above sea level.”

They turned right off of Pinckney Road onto Stinchfield Woods Road (sector 9). Not far from the intersection, they saw a radio tower. Becky told them that its call letters were **42 P**. She asked Jake to turn left at the first road. Soon they were at the observatory atop **43 P** Mountain.

When they arrived, the ceremony had just concluded. It seemed as if there were a couple hundred people standing around talking. Finally, Jake saw Leon. He hastily approached him and asked about the package. Leon informed him that the package was in his truck.

Together they walked to the truck, and Leon gave the package to Jake. Leon then hurried off to rejoin his friends. Jake returned to his Explorer where his friends were anxiously awaiting his return.

Turning the vehicle around, Jake went back to the light-duty road and turned right, the opposite direction from when they had driven to the observatory. It was then that Stu first noticed they were being followed by a rusty white Mustang.

“Let’s get out of here!” Jake said as he quickly depressed the accelerator.

They raced down the mountain completely oblivious to the radio telescopes to their right. As they approached North Territorial Road, they saw that the Mustang was still following them. Jake turned left, and a bullet pierced the rear window.

“I’ll turn at the first road we come to. Maybe we can lose them.”

They had gone only 0.17 miles east on North Territorial Road when Jake spotted a road leading off to the right.

“Don’t turn there!” Becky shouted. It was too late, for Jake had already started the turn.

“What’s wrong with this road?” Jake demanded.

“It runs through a swamp that dead-ends at a small lake (S ½ / SW ¼ / 14 / T1S-R4E).”

Jake was forced to a stop at the shoreline of the lake. The Explorer was still on the road, but just barely. Its front bumper was precariously hanging over the edge of the water.

\* \* \* \* \*

Jimmy and Roxy saw the Explorer turn off North Territorial Road. Roxy got off one shot at the fleeing SUV. They were in hot pursuit when Jake turned onto the dead-end road. Jimmy thought this was his chance to catch up to the Explorer. He floor-boarded the Mustang, unaware of what lie ahead! The road was wet and muddy. Jimmy found himself behind the wheel of a car totally out of control. They fishtailed for 100 feet, left the road, and plummeted into the swamp. They were trapped in their car.

\* \* \* \* \*

Jake witnessed what had happened to the Mustang. Knowing that the people in the car were armed, he decided to leave them as they were until the authorities arrived.

“What shall we do?” asked Robin.

“Quick! Give me the coordinates. I’ll call 911 on my cell phone,” Jake shouted as he grasped the phone from Stu’s outstretched hand.

“The Global Positioning System gives our coordinates as **44 P** N. latitude and **45 P** W. longitude,” Becky told Jake.

Jake completed his call. Soon they heard sirens and spied an approaching helicopter. The helicopter landed close by as two squad cars parked next to the Mustang.

After telling the officers all they knew, Jake, Becky, Stu, and Robin were told that they were free to go, but that they could anticipate being contacted soon. Stu drove, and Jake opened the package. The necklace, beautiful beyond belief, was safe and secure at the center of the book.

“What’s the name of the book?” Robin asked.

“*To Catch a Thief*,” Jake responded whimsically.

## To Catch a Thief

## Answer Key

### Maps used in this competition:

**HM** – Rand-McNally MI Highway Map

**N** – Negaunee SW Quadrangle

**O** – Omer SW Quadrangle

**P** – Pinckney Quadrangle

01. Hall (or) Highland Road

02. Oakland

03. 77

04. Auburn Hills

05. Toll

06. 297 miles

07. Michigan

08. H-4

09.  $287^\circ \pm 5^\circ$

10. N  $68^\circ$  W  $\pm 5^\circ$

11. 163

12. 12

13. b. medium

14. unimproved

15. Carp

16. 1340 feet

17. b. intermediate

18. 20 feet

19. b. 4

20. a. wooded marsh

21. c. SE

22.  $46^\circ 32' 30''$

23.  $87^\circ 40'$

24.  $1.93 \pm .05$

### Codes used in this competition:

**D&VI** – Detroit and Vicinity Inset

**M** = State Highway Routes as in M-36

**US** = US Highway Routes as in US-23

**I** = Interstate Routes as in I-75

25.  $162^\circ \pm 5^\circ$

26. Hartwick

27. b. no

28. 337

29.  $051^\circ \pm 2^\circ$

30. NW  $\frac{1}{4}$  / NW  $\frac{1}{4}$  / 29 / T19N-R5E

31. b. intermittent

32. 620

33. Flint

34. 5

35. d. SE

36. 1035

37. 1041 - 1049

38.  $42^\circ 22' 30''$

39. Dexter

40. Little Portage Lake

41. 850

42. WUOM - FM

43. Peach

44.  $42^\circ 23' 08'' \pm 05''$

45.  $83^\circ 56' 09'' \pm 05''$

For copies of the corresponding maps

for this unit plus two other units, visit

<http://www.otherworlds-edu.com>