

2001 Macomb Regional - Science Olympiad
Macomb Community College
Road Scholar - Division B

Code Name COBRA

Maps and quadrangles* used in this competition

Colorado Highway Map

Topographic Maps

Antero Reservoir Quadrangle

Hotchkiss Quadrangle

Rye Quadrangle

Record your answers on the answer sheet provided.

There are 47 questions on this exam. The number of correct responses will determine your team's rank. Ties will be broken by the accuracy of responses to selected questions. The first tie breaker question is number 14. The team with the most accurate response will be awarded the higher position. If a tie still persists, it will be broken by the accuracy of responses to questions numbered 15, 8, and 9 in that order. Keep in mind that it is to your advantage that you answer each tie-breaking question. This is the only way you will have a chance at the higher position in the event of a tie with another school.

The map to be used in answering each question is stated with the question number. The following code will be used.

HM = Colorado Highway Map

AR = Antero Reservoir Quad

H = Hotchkiss Quad

R = Rye Quad

In the story:

State Routes will be designated with a **C**. Example: C-92

U.S. Routes will be designated **US**. Example: US-42

Interstate highways will be designated with an **I**. Example: I-70

Please respond to multiple choice questions by entering the **letter** of your answer choice on the response sheet.

***Refer to the answer sheet for information on how to easily obtain the required maps for this unit.**

Code Name COBRA

With the end of the Cold War, the United States thought and hoped that Russia would no longer pose a threat to world peace. This sense of security was shattered when a KGB colonel, code name Cobra, contacted the National Security Council with news that the Russians were building a new biological weapons plant in the Ural Mountains. Cobra assured them that he knew the location of the facility and had in his possession a complete set of plans for the complex. He was willing to sell the information for \$3,000,000 in uncut diamonds.

Within hours after receiving Cobra's offer, the National Security Council held a top-level meeting. It was determined to be in our nation's best interest to purchase the information. The operation was assigned to the Central Intelligence Agency [CIA]. Cobra told the CIA that, after his offer was accepted, he would arrange for the exchange to occur near the town of Hotchkiss, Colorado, on May 14th. The exact location would appear in the classified section of the May 14th edition of the *Denver Rocky Mountain News*.

The CIA decided to send two teams of operatives to Hotchkiss. Team A consisted of agents James Stock who had worked with and against Cobra during the Cold War, and Julie Moneynickel, a biochemist who could verify the data. Team A was to be dispatched to Hotchkiss on May 10th to familiarize themselves with the area.

Team B was to serve as backup. They were to observe, but not make contact with Team A unless a major emergency arose. Team members, Stacy Drew and Al Columbo were to arrive in Hotchkiss on May 11th. Their cover was that of prospectors. Their old, beat-up Dodge van was purposely made to appear as if it were ready for the junk heap. Beneath the rust and dents, however, was a powerful, finely tuned engine. The van was mechanically perfect with state of the art components and accessories.

Stacy and Al arrived in Hotchkiss shortly after 8:00 A.M. They carefully surveyed the town, pausing for a moment near the radio tower (sector 4 on the Hotchkiss Quad).

"We have no idea where Cobra plans to meet. My guess is that it will be close to town," Stacy commented.

"Let's study the Hotchkiss Quadrangle to discover what the terrain is like," Al replied.

Stacy located the Hotchkiss Quad and carefully unrolled it.

"Okay. Let's see. The map scale is **1 [H]**. The map is in the **2 [H]** minute series. The contour interval is **3 [H]**, and the declination from star North to magnetic North is **4 [H]**."

"I see some purple on the map," Al commented. "When was the Hotchkiss Quad last photorevised?"

“It was photorevised in **5 [H]**,” Stacy replied.

“Let’s assume that Cobra does arrange the meeting near town. Hotchkiss is in sector **6 [H]**. The town is near the West neat line of the map, so he may choose a place on the adjacent quadrangle directly West of the Hotchkiss Quad. It’s not that far away.”

“Good point, Al,” Stacy said. “The quadrangle located to the west of the Hotchkiss Quad is **7 [H]**. We have that quadrangle should we need it.”

“I’m going to stretch,” Al muttered as he stepped out of the van.

“I’ll bring the map and join you,” Stacy remarked.

At the foot of the radio tower, Al stopped and pointed to a water tank [NE ¼ NE ¼ 25 T14S – R93W]. “The base of that tank would be a great place for a meeting.”

Stacy, consulting the map, said, “The distance from the radio tower to the water tank is **8* [H]** miles at an azimuth of **9* [H]** degrees. Next to the water tank is a **10 [H]** [A. dam, B. school, C. reservoir, D. cemetery]. The elevation at the base of the water tank is **11 [H]** feet above sea level.”

“What’s that pattern of green about 0.25 miles west of the water tank?” mused Al.

“On a topographic map, those patterns symbolize a/an **12 [H]**,” Stacy responded.

Al continued studying the landscape as Stacy directed her attention toward the quad.

After several minutes, Stacy said, “Al, look at this gravel pit in sector 8. It’s about 0.5 miles South of Baxter Reservoir. An unimproved road leads from the pit to C-92. According to the key, C-92 is a **13 [H]** [A. primary, B. medium-duty, C. light duty] road. Cobra might choose the gravel pit for the meeting.”

“Good thought. Calculate the coordinates of the gravel pit. That may prove helpful later.”

Within moments, Stacy had recorded the latitude of the gravel pit as **14* [H]** and its longitude as **15* [H]**. She made certain that she had included the directional unit of each.

“What time is it?” Al asked.

“It’s 9:45 A.M.,” Stacy replied.

Suddenly they felt an intense shaking of the ground. Stacy and Al were both thrown to the ground. As they looked up, they were shocked to see the radio tower swaying crazily.

Meanwhile, in a third floor room of the Hotchkiss Hotel, James Stock had been gazing at the bag of diamonds on the desk. The desk stood within inches of an open window.

James heard a gentle knock on the door, and Julie entered. She asked if he happened to be hungry. She had heard of a nearby restaurant reputed to serve great breakfasts. Before James could reply, a violent shaking threw them to the floor. Julie, startled to see the desk slam into the wall next to the open window, shrieked loudly.

“What was that?” James shouted.

“An earthquake,” retorted Julie. “Whoops, there go the diamonds.”

James turned in the nick of time to watch the bag of diamonds disappear out the open window. Jumping up quickly, he ran to the window and saw that the bag had fallen through the open sunroof of a green and red Ford Focus.

James grabbed Julie’s hand, and together they ran out of the room to the staircase. When they had reached the second floor, they felt another tremor. The force tossed them heavily against the wall. Regaining their footing, they continued down the steps and across the lobby to the door. Once outside they spied the Focus, towed by a purple camper, speeding Westward on C-92. James and Julie rushed to their Dodge Viper.

The earthquake had caused very little damage to the town. There were a few broken windows, some cracked plaster, and a few collapsed shelves, but all in all Hotchkiss had survived the quake. Only when they spotted a fallen light pole resting on the roof of their Viper did they become alarmed.

“We have to summon the B team. This is a major emergency. I hope they’re in town!” shouted Julie in an obviously concerned tone of voice.

“My cell phone is in my room,” James replied.

They hurried back to the hotel room to call the B Team. Al said he knew the location of the hotel and that he and Stacy could be there within five minutes.

As the van pulled up to the front of the hotel, Stacy noticed that James and Julie appeared rather puzzled, probably due to the shabby appearance of their vehicle. James and Julie hopped into the back seat, and they headed West on C-92. Just outside of town they crossed Leroux Creek with its **16 [H]** [NW, NE, SW, SE] directional flow.

“Toss me the Colorado Road Map,” Stacy demanded.

In half an hour they had arrived in the small town of Delta [F-3 on the highway map] where C-92 dead-ended at US-50.

"Which way shall I turn?" Al queried.

"Let's ask that old timer sitting on the park bench," suggested James.

"Sir, did you happen to spot a purple camper towing a green and red Ford Focus a short while ago?"

"Hard to miss that rig, Stranger," replied the old timer.

"Which direction did it turn?" queried James.

"That depends! How much is it worth to you?"

"How about ten bucks?" offered James.

"Thanks, Stranger. The rig headed South on US 50 toward Montrose."

As their van sped toward Montrose, Al asked, "How far is it from Delta to Montrose?"

"The distance is about **17 [HM]**," replied Stacey.

"Has anyone ever heard of a tree called Sweitzer S. P.?" asked Stacy.

"What makes you ask a question like that?" quizzed Al.

"It's right on the map. See, Sweitzer S.P.," replied Stacy in a rather perturbed manner.

"Those letters refer to **18 [HM]**. What did you think they stood for? Stupid Pine or something?"

Traveling toward Montrose, Julie asked, "What's the name of the river on the left side of the road?"

Stacy, looking at the map, replied, "That's the **19 [HM]** River."

As they approached the town of Montrose, Stacy spotted the green and red Focus at a gas station. The driver informed them that he had purchased the Focus just an hour earlier from a couple by the name of Smith. He also told them that the Smiths were driving a purple camper. James asked Joey if he had found a bag on the rear floor of the car. Joey stated that the couple had taken everything out of the car and had put it into their camper. When asked which direction the Smiths were traveling, Joey informed them that the Smiths had turned onto State Highway **20 [HM]** heading East to Gunnison. He had also overheard the couple mention that they were going visit an old friend in Rye.

“Where’s Rye?” Al asked Stacy.

Glancing at the highway map, Stacy commented that this route was going to be quite **21[HM]** as indicated by the series of green dots lying adjacent to the route. Consulting the map grid, she identified the coordinates for Rye to be **22 [HM]**.

"Let’s just follow them. They have only a sixty minute head start," James suggested to his companions.

After traveling about 40 miles East on US-50, they crossed over a very long narrow lake. They were now traveling parallel to its North shore.

Stacy commented, “On the other side of this lake, the South side, is the **23 [HM]** National Recreation Area. I hope they’ve not decided to stop there for the night."

“If they happen to have done that, we will wait for them in Rye tomorrow,” Julie stated.

As they approached the Eastern end of the lake, they discovered that US-50 had been temporarily closed. An aftershock had caused a landslide that had left large portions of the road under tons of rock and debris.

James asked the officer blocking the road when the landslide had occurred and if anyone had been injured. The officer said that the aftershock had occurred about an hour ago and that no one had been harmed. He also mentioned that a purple camper had been the last vehicle to safely pass through.

Overhearing the conversation, Stacy consulted the highway map in search of an alternate route. "We’ll backtrack a bit and take C-149 to South Fork, and then continue on US-160 to Walsenburg. From Walsenburg we’ll take 1-25 North to C-165. It is **24 [HM]** miles from the C-160/I-25 Interchange to C-165. We’ll take the **25 [HM]** exit to Rye, just about six short miles from Rye.

They made good time on C-149, but as darkness fell, fog began to form. By the time they had reached South Fork, visibility was so poor they found themselves having to stop and spend the night at the only motel in town.

When they awoke the next morning, the fog had lifted permitting them to continue their journey. They arrived in Rye shortly before noon. Because they had not eaten for a long time, they decided to have lunch. Stacy brought the Rye Quadrangle into the restaurant and studied it carefully as they waited for their lunch to be served.

Al asked, “Did we pass a sign indicated a fish hatchery near town?”

“Here it is,” Stacy answered. “It’s in the NW ¼ SW ¼ 32 T24S - R67W.”

“What’s the black cross located next to the fish hatchery?” Julie asked.

“That’s a graticule tick mark,” Stacy replied. “Its coordinates are **26 [R]** North latitude and **27 [R]** West longitude.”

“They must raise the hatchlings in the **28 [R]** [A. perennial, B. intermittent] streams that flow on either side of the hatchery,” Al commented.

James asked the restaurant manager if he had seen a purple camper in town. The manager indicated that he had seen such a camper parked at Jack Parker’s house, but that it was no longer there when he passed by this morning.

“Where can we find Jack Parker?” James inquired.

“He’s the principal at the high school,” the manager responded.

“Here’s the high school,” Stacy said as she pinpointed its location on the map. “The legal land description of the high school is **29 [R]**.”

“Look at the high school track. It has a **30 [R]** foot contour running through it. Competing on that track must present quite a challenge,” Al observed.

“The contour must be a/an **31 [R]** [A. index, S. intermediate, C. supplementary, D. depression] contour line,” Julie commented.

They parted the restaurant and drove to the high school. Jack Parker informed them that his friends had left for the Antero Reservoir State Wildlife Area early that morning.

Back in the van, Stacy asked Al to turn right from the school’s parking lot onto C-165. As they made the turn, Julie glanced at the van’s compass and noted that they were traveling at an azimuth of **32 [R]** [A. 260 degrees, S. 290 degrees, C. 315 degrees, D. 345 degrees). Soon they were off the Rye Quadrangle Map and Stacy returned to the highway map. Stacy noticed that, on the map, there were several green triangles next to C-165. She recognized these as symbols for **33 [HM]**.

They continued on C-165 until it dead-ended. At that point, they turned on to C-67. Twenty-one long miles later, they approached the town of Florence. At Florence, they turned left onto C-115 that took them to Canon City.

“I seem to recall childhood memories of a scenic area located somewhere near Canon City,” Al commented.

“Yes, the **34 [HM]** is located here.” Stacy recalled. This feature was carved by the rapid flow of the **35 [HM]** River that eventually fills the Pueblo Reservoir and continues onto the State of **36 [HM]**.”

They followed US-50 through Canon City and turned right onto C-9. They traveled **37 KM** [A. northeast, B. north, C. west, D. northwest] for 47 miles to US-24 at which point they turned left. Stacy remarked that if they had turned right onto US-24 they would have come to the Wilkerson Pass whose elevation is **38 [HM]** feet.

Stacy asked Julie to hand her the Antero Reservoir Quadrangle Map. Julie found the map, and passed it on to Stacy.

Stacy studied the map for a few moments. “We’ll begin using the quad map when we cross its Eastern neat line which, incidentally, has a longitude of **39 AR W**. We are on US-24 and will enter the Antero Reservoir Quad at sector 3. When we enter the map area, we will be following an azimuth of **40 [AR]** degrees.”

The van was equipped with a global positioning system, so they knew exactly when they had crossed onto the area of the Antero Reservoir Quad. Stacy asked Al to turn right at the first road he came to. It was an unimproved road that took them to the shoreline of the Antero Reservoir.

As they approached the reservoir, Stacy commented, “As you can see, we are in a campground. Let’s search for the purple camper.”

“What’s the water elevation of the Antero Reservoir?” James asked.

“The elevation is **41 AR** feet,” replied Stacy.

They spotted the camper parked on a peninsula connected to the mainland by an isthmus [a narrow strip of land]. Arriving at the camper, they found that the Smiths were not there, and that the camper was locked.

“We could break in,” Al suggested.

“We’re not common criminals for Heaven’s sakes!” Julie exclaimed.

“I was just joking,” Al retorted.

Meanwhile, James and Stacy were surveying the surrounding area with the aid of binoculars

“I see two really flat islands in the reservoir,” James remarked.

“They are flat,” Stacy said as she put down her field glasses and picked up the map. “The larger of the islands has an enclosed intermediate contour. The value of the contour is **42 [AR]** feet. The smaller island has a benchmark, with a brown numeral seven. The elevation at the ‘x’ is **43 [AR]** feet.”

A few minutes passed before James spotted two people climbing a hill (36 T12S - R77W and 31 T12S - R76W). They drove the van to the Salt Works Ranch [sector 5], parked, and walked North along the light duty road to the hill.

Looking at the hill and then the map, Stacy said, “The hill is steep as indicated by the closely-spaced contours. Since the contours are spaced nearly equally, the slope can be described as being **44 [AR]** (A. simple, B. concave, C. convex). That should make the climb easier. We don't have to worry about trees and brush since most of the vegetation is on the **45 [AR]** [A. Eastern, B. Southern, C. Western, D. Northern] half of the hill.”

Upon reaching the top of the hill, they found the owners of the camper, Bill and Patti Smith. The Smiths were about to finish their picnic lunch. They introduced themselves and asked the Smiths if they had found a canvas bag in their Focus. Bill said that he thought it belonged to Patti and that he had put it into their camper unopened. Patti added that she, too, had seen the bag, but thought it belonged to Bill.

James informed Bill and Patti that the contents of the bag could be vital to our national defense. He further informed them that he and Julie had been pursuing them from the time the bag had first fallen into their Focus during the Hotchkiss earthquake.

The agents, along with the Smiths, returned to the van and drove back to the camper. Bill unlocked the door and entered the camper. After a few anxious minutes he found the bag lying beneath a table and handed it to James. James opened the bag to verify that the stones really were the well-traveled diamonds they had been searching for.

“This is an extremely valuable cache,” James informed the Smiths. “I will try to arrange for you two to receive a reward.”

“We wouldn't hear of it,” Patti stated firmly. “If it's for the good of the country, it's our duty to help in any way possible. We certainly don't want to be rewarded for being good citizens.”

After thanking Bill and Patti, the agents headed back toward Hotchkiss. They left the peninsula and returned to US-24. Here they turned right and remained on the road as it parted the Antero Reservoir Quad at its Southern neat line.

Stacy, once again consulting the highway map, directed Al to Johnson Village. Being extremely tired, they decided to spend the night and travel on to Hotchkiss the following day, May 13th. This would still give them time to prepare for Cobra.

The next morning the agents left Johnson Village, heading North on US-24. After traveling 20 miles, they came to C-82 and turned left. Upon approaching Aspen, Julie remarked that this resort town was famous for its excellent **46 [HM]** [A. bowling alleys, B. bingo games, C. ski resorts, D. pizza parlors].

They continued on C-82 to Carbondale. In Carbondale they turned left onto C-133 that took them past the **47 [HM]** Reservoir and on to Hotchkiss.

There was a message waiting for James at the hotel. After decoding it, James turned to the others and read aloud, "Satellite photos of the Ural Mountains do not reveal construction of any new facility except for a coal mine. This information has been confirmed by field agents. Apparently, Cobra was attempting to scam us into securing his own retirement. Return, with diamonds, to Langley immediately. I hope you had a restful time waiting around for Cobra. Of course, the days will be deducted from your vacation allotment."

"This was not my idea of a restful vacation. If I ever get my hands on Cobra, he may never be the same," Al uttered in dismay.

"Oh, well. We did have the opportunity to see many beautiful parts of Colorado!" exclaimed Julie.

James, Stacy, and Al looked at Julie and shook their heads in mild disbelief.

The End

2001 Macomb Regional Science Olympiad
Macomb Community College – South Campus
Answer Sheet

Code Name COBRA

- | | |
|-----------------------------------|--|
| 1. 1:24000 | |
| 2. 7.5 | |
| 3. 20 feet | |
| 4. 13.5° | |
| 5. 1979 | |
| 6. 4 | |
| 7. Lazear | |
| 8. 0.6 – 0.7 0.65* | |
| 9. 341 – 347 344* | |
| 10. C Reservoir | |
| 11. 5621' – 5639' | |
| 12. Orchard | |
| 13. B Medium-duty | |
| 14. 38°45'29" N 38°45'33.6" N* | |
| 38°45'38" N | |
| 15. 107°40'08"W 107°40'12.5"W* | |
| 107°40'17" | |
| 16. SE | |
| 17. 21 miles | |
| 18. State Park | |
| 19. Uncompahgre | |
| 20. 347 | |
| 21. Scenic | |
| 22. H-9 | |
| 23. Curecanti | |
| 24. 24 | |
| 25. 74 | |
| 26. 37°55' | |
| 27. 104° 55" | |
| 28. B Intermittent | |
| 29. SW ¼ SE ¼ 30 T24S – R67W | |
| 30. 6760 feet | |
| 31. B Intermediate | |
| 32. C 315° | |
| 33. Campsites | |
| 34. Royal Gorge | |
| 35. Arkansas | |
| 36. Kansas | |
| 37. D Northwest | |
| 38. 9507 | |
| 39. 105° 52' 30" | |
| 40. 218 – 222 220* | |
| 41. 8940 | |
| 42. 8960 | |
| 43. 8947 | |
| 44. A Simple | |
| 45. D Northern | |
| 46. C Ski resorts | |
| 47. Paonia | |

*Indicates a tie-breaking question

For information on how to quickly obtain a set of USGS Quads plus the Highway Map for **Code Name COBRA**, plus other coaching aides, visit the following site:

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

Harry's Bid for Freedom, another free, downloadable Road Scholar exam located on this web site uses the same set of Quads plus highway map as the exam – Code Name COBRA.

**2001 Macomb Regional Science Olympiad
Macomb Community College – South Campus**

Code Name COBRA

Student Response Sheet

1.	_____	27.	_____
2.	_____	28.	_____
3.	_____	29.	_____
4.	_____	30.	_____
5.	_____	31.	_____
6.	_____	32.	_____
7.	_____	33.	_____
8.	_____	34.	_____
9.	_____	35.	_____
10.	_____	36.	_____
11.	_____	37.	_____
12.	_____	38.	_____
13.	_____	39.	_____
14.	_____	40.	_____
15.	_____	41.	_____
16.	_____	42.	_____
17.	_____	43.	_____
18.	_____	44.	_____
19.	_____	45.	_____
20.	_____	46.	_____
21.	_____	47.	_____
22.	_____		
23.	_____		
24.	_____		
25.	_____		
26.	_____		