POLE MOUNTAIN LEARNING · PRINTABLE · NO DEVICE NEEDED

Terrain Park Functions: Ride 1 of 2

The six stops of the course · Grade 10



Name or class code _____ Date _____

Your ride

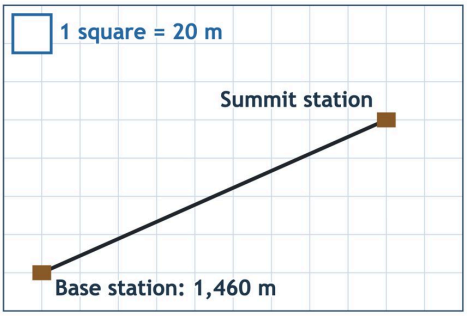
1. Work each stop in order. Show your thinking in the Work box.
2. Circle the letter or write your answer on the line, then tick that stop on the map.
3. Several stops have Part A and Part B (and sometimes Part C). Answer every part.
4. Your teacher checks each stop. If you missed one, your teacher reads you the clue and you try once more. Keep your first answer; write the new one beside it with a star (★).
5. A calculator is allowed. Use degree mode for the trigonometry stops.

1 Chairlift	2 Groomed Run	3 Rail	4 Big Jump	5 Halfpipe	6 Two-Rider Bonus
☐ A ☐ B ☐ fixed ★	☐ A ☐ B ☐ fixed ★	☐ done ☐ fixed ★	☐ A ☐ B ☐ fixed ★	☐ done ☐ fixed ★	☐ A ☐ B ☐ C ☐ fixed ★

1 Chairlift: Read the lift profile

N.Q.1

The diagram is a side view of the lift drawn on a grid. Use its scale and the base elevation.



Part A. How many meters of elevation does the lift gain from the base to the summit?

Write a number only. A decimal is fine.

Answer: _____ m

Part B. At what elevation is the summit station?

Write a number only. A decimal is fine.

Answer: _____ m

Work

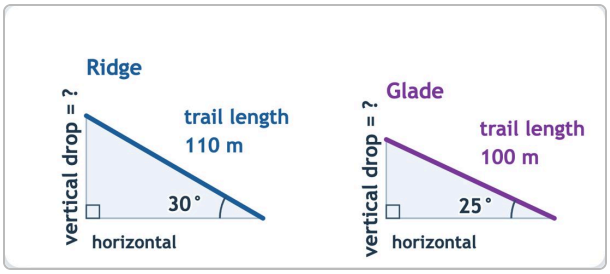
2 Groomed Run: Find the vertical drop

G.SRT.8

Two groomed routes, Ridge and Glade, leave the same fork.

Each route is a straight trail. In the diagrams, the trail length is the slanted side of a right triangle, and the angle is measured from horizontal.

In words: Ridge: trail length 110 m, 30° from horizontal. Glade: trail length 100 m, 25° from horizontal. A calculator in degree mode is allowed.



Part A. The trail crew needs a route that drops 38-44 vertical meters. Which route meets that requirement?

(A) Ridge

(B) Glade

Part B. For the route you chose, what is its vertical drop? Round to the nearest tenth of a meter.

Write a number only. Use a calculator in degree mode and round only at the end.

Answer: _____ m

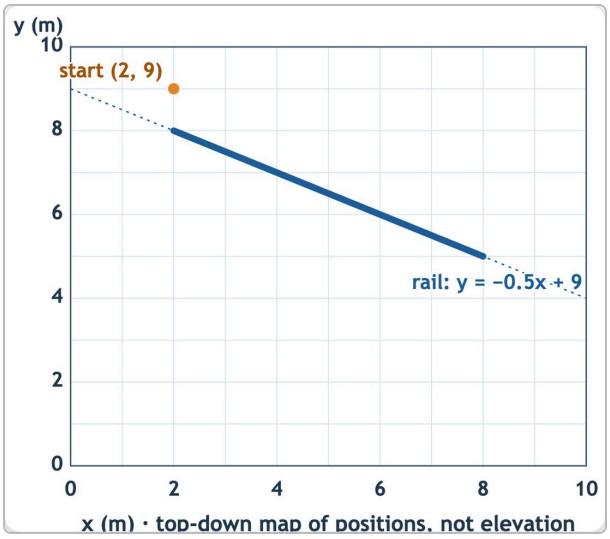
Work

3 Rail: Hold a parallel line

G.GPE.5

The map is a top-down view: x and y are positions in meters, not elevation.

Given: the rail is y = −0.5x + 9. The start is marked at (2, 9).



Write an approach line that passes through the marked start and stays parallel to the rail.

Write an equation using x and y, such as y = mx + b with your numbers. A fraction or a decimal is fine. The form y − k = m(x − h) also works.

Answer:

_____

Work

4 Big Jump: Model the flight

S.ID.6a

Which model best fits these measured heights? Use it to predict where the board returns to landing height after takeoff.

The board leaves the lip at x = 0. x is the distance from the lip in meters; y is the height above the landing in meters.

x (m)	0	2	4	6	8
measured y (m)	0	3.1	4.9	4.7	3.3

Part A. Which model best fits the measured trials?

(A) $y = \frac{x(12 - x)}{6}$

(B) $y = \frac{x(8 - x)}{4}$

(C) $y = \frac{x(10 - x)}{5}$

Part B. Using the model you chose, how far from the lip does the board return to landing height?

Write a number only. A decimal is fine.

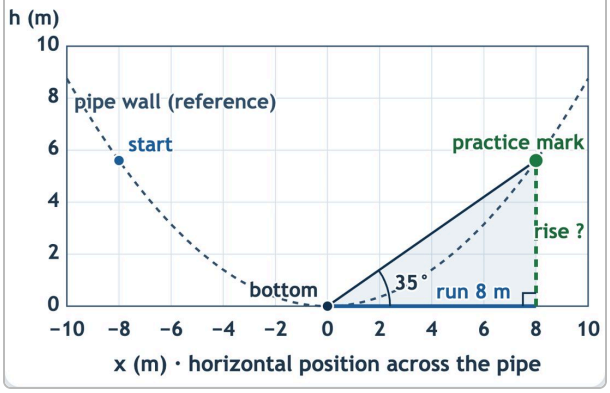
Answer: _____ m

Work

5 Halfpipe: Find the practice mark's height

G.SRT.8

Given: from the bottom of the pipe, the horizontal run to the practice mark is 8 m. The angle from horizontal up the straight sight line to the mark is 35°.



How high above the bottom of the pipe is the practice mark? Use degrees and round to the nearest tenth of a meter.

Write a number in meters, rounded to the nearest tenth.

Answer: _____ m

Work

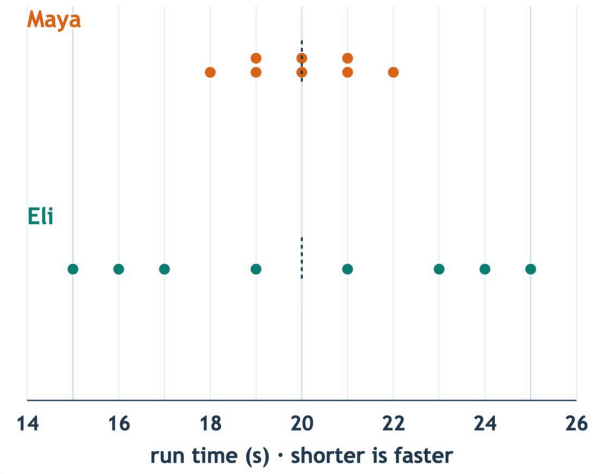
6 Two-Rider Bonus: Compare the riders' consistency

S.ID.2

Maya and Eli each timed eight runs on the same trail. Their median times match: both are 20 s. Use the interquartile range to compare how consistent their times were.

Maya	18	19	19	20	20	21	21	22
Eli	15	16	17	19	21	23	24	25

The times are sorted. Split each rider's eight times into two groups of four. Q1 is the median of the lower four and Q3 is the median of the upper four. IQR = Q3 − Q1.



Part A. What is Maya's interquartile range (IQR)?

Write a number. A decimal is fine.

Answer: _____ s

Part B. What is Eli's interquartile range (IQR)?

Write a number. A decimal is fine.

Answer: _____ s

Part C. Which rider has the more consistent middle half of run times?

(A) Maya (orange jacket)

(B) Eli (teal jacket)

Work

Second try (★), only if your teacher gives you the clue

POLE MOUNTAIN LEARNING · PRINTABLE · NO DEVICE NEEDED

Terrain Park Functions: Ride 2 of 2

Fresh check: the same six stops with new numbers · Grade 10



Name or class code _____ Date _____

Your ride

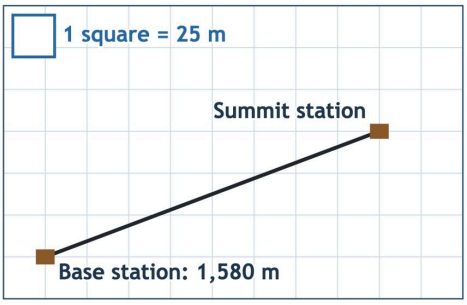
1. Work each stop in order. Show your thinking in the Work box.
2. Circle the letter or write your answer on the line, then tick that stop on the map.
3. Several stops have Part A and Part B (and sometimes Part C). Answer every part.
4. Answer each part once. Your teacher will check your answers after you finish this ride.
5. A calculator is allowed. Use degree mode for the trigonometry stops.

1 Chairlift	2 Groomed Run	3 Rail	4 Big Jump	5 Halfpipe	6 Two-Rider Bonus
☐ A ☐ B	☐ A ☐ B	☐ done	☐ A ☐ B	☐ done	☐ A ☐ B ☐ C

1 Chairlift: Read the lift profile

N.Q.1

The diagram is a side view of the lift drawn on a grid. Use its scale and the base elevation.



Part A. How many meters of elevation does the lift gain from the base to the summit?

Write a number only. A decimal is fine.

Answer: _____ m

Part B. At what elevation is the summit station?

Write a number only. A decimal is fine.

Answer: _____ m

Work

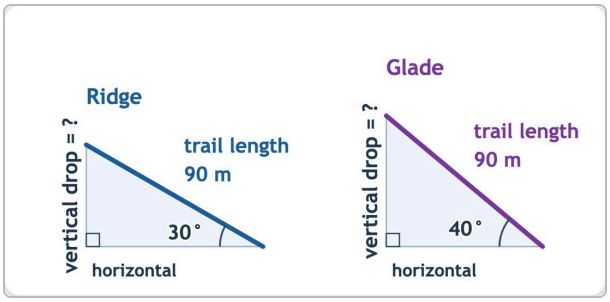
2 Groomed Run: Find the vertical drop

G.SRT.8

Two groomed routes, Ridge and Glade, leave the same fork.

Each route is a straight trail. In the diagrams, the trail length is the slanted side of a right triangle, and the angle is measured from horizontal.

In words: Ridge: trail length 90 m, 30° from horizontal. Glade: trail length 90 m, 40° from horizontal. A calculator in degree mode is allowed.



Part A. The trail crew needs a route that drops 42-48 vertical meters. Which route meets that requirement?

(A) Ridge

(B) Glade

Part B. For the route you chose, what is its vertical drop? Round to the nearest tenth of a meter.

Write a number only. Use a calculator in degree mode and round only at the end.

Answer: _____ m

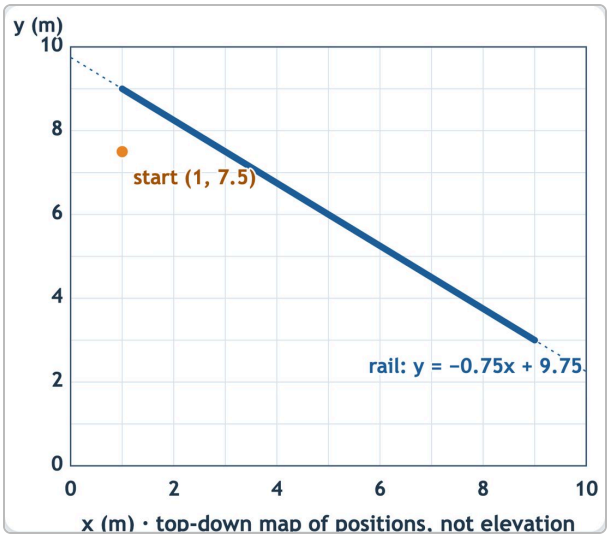
Work

3 Rail: Hold a parallel line

G.GPE.5

The map is a top-down view: x and y are positions in meters, not elevation.

Given: the rail is y = −0.75x + 9.75. The start is marked at (1, 7.5).



Write an approach line that passes through the marked start and stays parallel to the rail.

Write an equation using x and y, such as y = mx + b with your numbers. A fraction or a decimal is fine. The form y − k = m(x − h) also works.

Answer:

Work

4 Big Jump: Model the flight

S.ID.6a

A new set of trials is in. Choose the best-fitting model and predict where the board returns to landing height.

The board leaves the lip at x = 0. x is the distance from the lip in meters; y is the height above the landing in meters.

x (m)	0	2	4	6	8
measured y (m)	0	3.4	5	5.5	4.3

Part A. Which model best fits the measured trials?

(A) $y = \frac{x(9 - x)}{4.5}$

(B) $y = \frac{x(11 - x)}{5.5}$

(C) $y = \frac{x(13 - x)}{6.5}$

Part B. Using the model you chose, how far from the lip does the board return to landing height?

Write a number only. A decimal is fine.

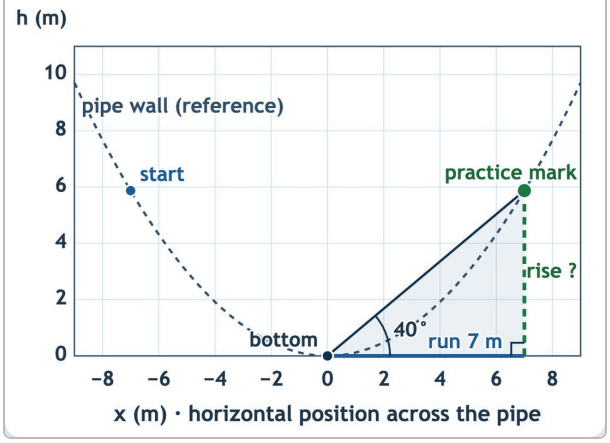
Answer: _____ m

Work

5 Halfpipe: Find the practice mark's height

G.SRT.8

Given: from the bottom of the pipe, the horizontal run to the practice mark is 7 m. The angle from horizontal up the straight sight line to the mark is 40°.



How high above the bottom of the pipe is the practice mark? Use degrees and round to the nearest tenth of a meter.

Write a number in meters, rounded to the nearest tenth.

Answer: _____ m

Work

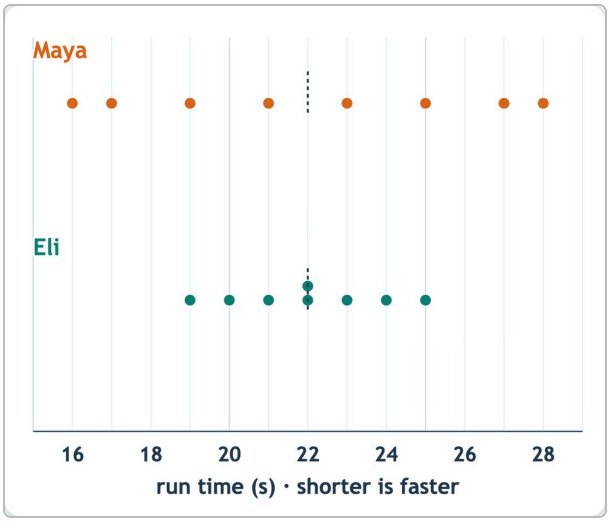
6 Two-Rider Bonus: Compare the riders' consistency

S.ID.2

Maya and Eli each timed eight runs on the same trail. Their median times match: both are 22 s. Use the interquartile range to compare how consistent their times were.

Maya	16	17	19	21	23	25	27	28
Eli	19	20	21	22	22	23	24	25

The times are sorted. Use the median of each half to find Q1 and Q3.



Part A. What is Maya's interquartile range (IQR)?

Write a number. A decimal is fine.

Answer: _____ s

Part B. What is Eli's interquartile range (IQR)?

Write a number. A decimal is fine.

Answer: _____ s

Part C. Which rider has the more consistent middle half of run times?

(A) Maya (orange jacket)

(B) Eli (teal jacket)

Work