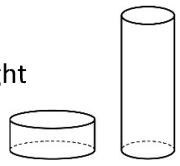
2023-2024 Practice Competition — Problems

Sprint 17 The heights of six students Addy, Beau, Corbin, Dede, Erin and Felix are 58 inches, 60 inches, 63 inches, 64 inches, 68 inches and 69 inches. Corbin is 4 inches shorter than Addy. Beau, Corbin and Erin are the three shortest students. Dede is one inch shorter than Felix. Beau is the shortest student. What is the sum of Felix's height and Erin's height, in inches?

Sprint 18 For integers a, b and k, we know that $a > 12$, $b < 20$ and $a < b$. If $b = 7k$, what is the value of k?

Sprint 19 Twenty students bought tickets for a school party. All of the money received for these 20 tickets was used to purchase beverages. Then, an additional 10 students bought tickets. Rather than use this additional money to buy more refreshments, all 30 students received a $3.00 refund. How many dollars were used to buy beverages?

Sprint 20 Two cylindrical containers have the same volume. The height of one container is triple the height of the other. If the radius of the narrower container is 12 inches, how many inches are in the length of the radius of the wider container? Express your answer in simplest radical form.

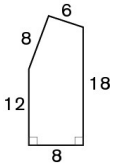


Sprint 21 When Shay rowed down Black River with the current, she took 1 hour to go 4 miles. When she rowed back the same distance, at the same rowing speed, but against the current, her trip required 2 hours. What was the speed, in miles per hour, of the current in Black River?

Sprint 22 In the figure, the hexagon with the "R" is colored red, and each of the other hexagons will be colored red, yellow or green, so that no two hexagons with a common side are the same color. In how many different ways can the figure be colored?

Sprint 23 In the chess club, there are 15 eighth graders, 6 of whom wear glasses. Nine students in the chess club wear glasses. Eight students in the chess club are neither eighth graders nor wear glasses. How many people are in the chess club?

Sprint 24 What is the area of the pentagon shown, with the indicated side lengths in inches?



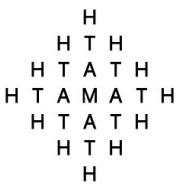
Sprint 25 A cube of edge length 3 units has each face painted orange. The cube is then cut into 27 unit cubes. How many of these unit cubes have exactly two faces painted orange?

Sprint 26 A peep increased by 25% is a pop. A pop decreased by 40% is a slug, and a slug increased by 100% is a slap. What percent of a peep is a slap?

Sprint 27 A 24-foot by 72-foot rectangular dance floor is completely tiled with 1-foot by 1-foot square tiles. Two opposite corners of the dance floor are connected by a diagonal. This diagonal passes through the interior of exactly how many tiles?

Sprint 28 If Jeff reverses the two digits of his age, divides the resulting number by three, and then adds 20, the result is Jeff's age. How old is Jeff?

Sprint 29 Starting at the M and moving left, right, up or down to an adjoining letter, how many distinct paths can be followed to spell the word MATH?



Sprint 30 If $\frac{a}{b} = \frac{3}{4}$, $\frac{b}{c} = \frac{8}{9}$ and $\frac{c}{d} = \frac{2}{3}$, what is the value of $\frac{ad}{b^2}$? Express your answer as a common fraction.