

Algebra Work Samples -Practice-

1. Alex, Fred and Thomas run at constant rates. In a race of 1,000 meters, Alex finished 200 meters ahead of Fred and 400 meters ahead of Thomas. When Fred finished, how far was he ahead of Thomas? (in meters) (H.1A.1)
2. Harold has twice as much money as Nadine. Nadine has three times as much money as Sandra. If together they have \$357.00, how much money does each of them have? (H.2A.7/8 A.REI.6)
3. Mr. Anderson drove his family to a picnic ground 60 miles from his home. When he returned home that evening, he increased his average speed 9 miles per hour compared to the rate on the way to the picnic. He reduced his return time by 20 minutes. What was his average speed going and returning? (H.3A.4/5 A.CED.1)
4. Two cars start out at the same point and move in the same direction. Their speeds are in the ratio 5:3. After 2 hours, the cars are 42 miles apart. Find their speeds. (H.2A.7/8 A.REI.6)
5. The sum of the squares of two consecutive positive even integers is 340. Find the integers. (H.2A.7; H.1A.5; H.3A.5)
6. An express train and a freight train depart San Francisco for Los Angeles at the same time. The average speed of the express train is 30 mph slower than twice the speed of the freight train. In two hours, the express train is 40 miles ahead of the freight train. Find the rate of the express. (H.2A.7/8)
7. Randy is driving from Salem to Portland. To get to Portland on time he needs to drive at an average speed of 60 miles per hour. He was halfway to Portland when he realized construction had limited his speed to 40 miles per hour for the first half-hour of his trip. How fast must he drive to average 60 miles per hour for the whole trip? (H.2A.7/8)
8. Your mathematics teacher, Ms. Lopez, says you have an 86.5% test average after 8 tests. You want to get an A. You will be taking 4 more tests and you hope to raise your overall test average to 90%. Your sister, Sally, says it is impossible for you to get an A because there aren't enough tests for you to raise your average that much. (H.2A.7 A.CED.1)

Is Sally right about not being able to get an A? What is the lowest average score needed on the remaining tests to earn an A? Explain your answer.

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9. Joe went to the fair and tried his hand at the shooting gallery. He earned 20 points each time he hit the target but lost 50 points when he missed. Joe ended the night with negative 470 points after 15 shots. How many times did he hit the target? Explain your thinking at each step and your answer. (H.2A.7/8 A.CED.3/4 A.REI.6)
10. Research for a hotdog stand shows that when they charged \$0.60 for a hotdog they would sell 100 hotdogs per game. For every \$0.05 less they charged, they sold 15 more hotdogs. For every \$0.05 more they charged they sold 15 fewer hotdogs. Hotdogs are purchased in packages of 15, and selling prices must always be multiples of \$0.05. Show what price a hotdog should be sold for to maximize the income. (H.2A.7/8; A.CED.3; A.REI.6)
11. A person's total weight is equal to the sum of lean body weight and body fat. Joe weighs 150 lbs. 17% of his body weight is fat. Show how many pounds (to the nearest tenth) of fat he must lose to reach his goal of 8% body fat. (Note: the lean body weight does not change) (H.1A.2)
12. Cathy lives near a park that has a bike trail. She can rent a bike with safety equipment for \$5 a day. With her own safety equipment, the bike rental is \$3 a day. Cathy could buy equipment for \$28. How many times must she bike the trail to justify buying the safety equipment? (H.2A.7/8; A.CED.3; A.REI.6)
13. Susie is organizing the printing of tickets for a show her friends are producing. She has collected prices from several printers and these two seem to be the best.

SURE PRINT Ticket printing 25 tickets for \$2	BEST PRINT Tickets printed \$10 setting up plus \$1 for 25 tickets
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Explain to Susie a couple of ways in which she could make the right decision, depending on the number of people who attend.

Illustrate your advice with a couple of examples. (H.2A.7/8)

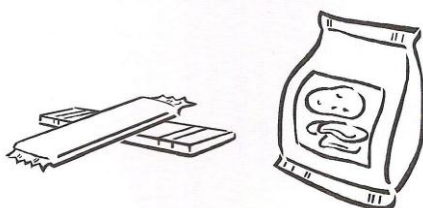
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14. Ralph and Jody go to the store to buy potato chips and candy bars.

Ralph buys 3 bags of potato chips and 4 candy bars. He spends \$3.75.

Jody buys 4 bags of potato chips and 2 candy bars. She spends \$3.00.

Ethan asks to buy one bag of potato chips and one candy bar. How much should he pay? (H.2A.7/8)



15. A parabola with vertex $(2,0)$ and axis of symmetry parallel to the y -axis, passes through $(3,1)$ and $(-3,t)$. Find the value of t . (H.3A.5 F.1F.7a)

16. Two poles, 60 feet tall and 20 feet tall, stand on opposite sides of a field. The poles are 80 feet apart. Support poles are placed from the top of one pole to the bottom of the opposite pole. How far above the ground is the intersection of the cables? Explain your answer in detail. (H.2A.8)

17. You work for a tile company that makes tiles for patios. A customer sent you the following picture of his patio. He said the patio is made up of the same tiles, positioned either vertically or horizontally. He says he wants to replace three tiles that are cracked. He didn't tell you the dimensions of the tile itself but did tell you that the width of the patio was 8 ft.

Determine the dimensions of a tile in the patio.

Explain how you found your solution. (H.2A.8)

