

Unit Rates, Ratio Notation

Knowing the unit rate of an item makes you a smarter shopper. For example, when shopping and comparing brands of the same quality, buy the item with the lower unit cost. Items are often sold in various quantities, and to find this cost simply divide the total price by the volume of the item contained.

Example:

A box of 20 ounces of Crunchy Granola cereal costs \$5.00.

A box of Healthy Trail Granola cereal costs \$7.50 and contains 25 ounces.

1) Which cereal has a lower unit (1 ounce) cost?

Crunchy Granola: $\frac{\$5.00}{20} = 0.25$ per ounce

Healthy Trail Granola: $\frac{\$7.50}{25} = 0.30$ per ounce

Crunchy Granola is the better buy.

2) How much would a shopper save when buying 60 ounces of Crunchy Granola?

Difference per ounce: 0.05

Number of ounces: 60

$$0.05 * 60 = \$3.00$$

The shopper will have a \$3.00 dollar savings!

Name:

Date:

Chang Learning

SHSAT Lesson 7: Unit Rates, Ratio Notation

SHSAT Lesson #7 Classwork: Unit Rates, Ratio Notation

1. If a bag of 48 pencils cost \$9.60, what is the unit cost per pencil?	A. \$0.01 each B. \$0.05 each C. \$0.10 each D. \$0.20 each E. \$0.25 each
2. Which of the following is the unit cost of 5 t-shirts for \$9.00?	A. 20 t-shirts for \$36.00 B. 10 t-shirts for \$18.00 C. 5 t-shirts for \$9.00 D. 2 t-shirts for \$3.60 E. 1 t-shirt for \$1.80
3. How much is the unit cost of super electro-water 12 ounces for a \$4.80 bottle?	A. 50 cents per ounce B. 40 cents per ounce C. 30 cents per ounce D. 20 cents per ounce E. 10 cents per ounce
4. How much is one copy of colored paper if 50 copies cost \$9.90? (Round to the nearest whole cent)	A. 16 cents B. 18 cents C. 20 cents D. 22 cents E. 24 cents
5. Supper Time Savings sells sacks of super chunk dog food for \$36 for a 30 pound bag of mighty meat mix. How much is the dog food per pound?	A. \$1.10 B. \$1.20 C. \$1.30 D. \$1.40 E. \$1.50
6. Filthy Floor Facilities fixes floors \$15 per 100 square feet. How much is that per square foot?	A. \$0.05 B. \$0.10 C. \$0.15 D. \$0.30 E. \$0.6666666666

SHSAT Lesson #7: Classwork (EASY LEVEL)

7. If $a = 5$, then $4a^3 - 3a^2 + 2a - 1 =$	A. 39 B. 125 C. 434 D. 586 E. 525
8. There are 80 lab mice in a cage. For every 3 gray mice, there is 1 white mouse. How many gray mice are there?	A. 12 B. 24 C. 36 D. 60 E. 75
9. If $x = 3$, what is the value of $\frac{5(4+x)}{2x}$?	A. 15 B. $\frac{25}{2}$ C. 10 D. $\frac{20}{3}$ E. $\frac{35}{6}$
10. If today is Monday, what day of the week will it be in 180 days ?	A. Sunday B. Saturday C. Friday D. Thursday E. Wednesday
11. Billy walks at a rate of 150 feet per minute. Johnny walks at a rate of 200 feet per minute. If they start at the same time, how far ahead will Johnny be after 12 minutes ?	A. 150 feet B. 300 feet C. 450 feet D. 600 feet E. 900 feet
12. How much more per cupcake is (10 for \$9.50) versus (7 for \$4.90)?	A. \$0.05 more each B. \$0.10 more each C. \$0.20 more each D. \$0.25 more each E. \$0.30 more each

SHSAT Lesson #7: Classwork (MID LEVEL)

<p>13. Wonderful window washers cleans windows \$5 per 3 windows of any size. How much is that per window?</p>	<p>A. \$1.05 B. \$1.10 C. \$1.15 D. \$1.30 E. \$1.666666666</p>
<p>14. If $N = \sqrt{64 - 13}$, then N is</p>	<p>A. A number between 9 and 10 B. A number between 8 and 9 C. A number between 7 and 8 D. A number between 6 and 7 E. 9</p>
<p>15. If a snake travels at a constant rate of 1 foot per second, how many yards per minute does it travel? (1 yard = 3 feet)</p>	<p>A. 10 B. 20 C. 30 D. 40 E. 60</p>
<p>16. A shuttle bus travels the first 130 miles in 2 hours, and the second 200 miles at the rate of 50 mph. What was the average speed of the bus for the entire trip?</p>	<p>A. 67.5 mph B. 60 mph C. 58 mph D. 57.5 mph E. 55 mph</p>
<p>17. $1\frac{1}{10} + 2\frac{11}{100} + 3\frac{111}{1000} =$</p>	<p>A. 6.111 B. 6.123 C. 6.111111 D. 6.321 E. 6.6</p>
<p>18. If 30 pairs of black socks cost the same as 25 pairs of white socks, how much is each pair of black socks if 25 pairs of white socks cost \$48?</p>	<p>A. \$2 per pair B. \$1.80 per pair C. \$1.60 per pair D. \$1.20 per pair E. None of the above</p>

SHSAT Lesson #7: Classwork (CHALLENGE LEVEL)

<p>19. If 30 pairs of black socks cost the same as 25 pairs of white socks, how much is each pair of white socks if 25 pairs of black socks cost \$48?</p>	<p>A. \$2 per pair B. \$1.80 per pair C. \$1.60 per pair D. \$1.20 per pair E. None of the above</p>
<p>20. What is the smallest integer that is the sum of three different primes, each of which is greater than 10?</p>	<p>A. 43 B. 41 C. 33 D. 12 E. 10</p>
<p>21. Two-Thirds of a number is equal to N. What is double that original number, in terms of N?</p>	<p>A. $\frac{4}{3}L$ B. $\frac{4}{3}L$ C. $2L$ D. $3L$ E. $4L$</p>
<p>22. In a scale diagram, 1 inch represents 5 feet. On the same diagram, how many square inches would represent 1 square foot?</p>	<p>A. 25 B. 4 C. .4 D. .25 E. .04</p>
<p>23. If $\frac{a}{b} = \frac{1}{3}$, where a and b are each greater than 3, which of the following must also equal $\frac{1}{3}$?</p>	<p>A. $\frac{3ab}{a+b}$ B. $\frac{a+b}{3ab}$ C. $\frac{a+b}{3a}$ D. $\frac{b}{3a}$ E. $\frac{b}{9a}$</p>
<p>24. Two teams are having a contest in which the prize is a box of candy that the members of the winning team divide evenly. If team A wins, each player will get exactly 3 pieces of candy, and if team B wins, each player will get exactly 5 pieces of candy. Which of the following could be the number of pieces of candy in the box?</p>	<p>A. 153 B. 325 C. 333 D. 425 E. 555</p>

SHSAT Lesson #7: Classwork: Grid In Questions (ALL LEVELS)

<p>25. (Easy Level)</p> <p>There are 7 mystery books for every 3 history books in a basket. How many books are there total if there are 21 history books ?</p>	Grid In
<p>26. (Easy Level)</p> <p>There are 40 cars for every 8 buses. There are 3 buses for every 5 trucks. How many cars are there per truck?</p>	Grid In
<p>27. (Mid Level)</p> <p>The number 120 is divisible by a few powers of two. At most, that divisor would be 2^n. What is n ?</p> <p>Powers of two: {2,4,8,16,32}</p>	Grid In
<p>28. (Mid Level)</p> <p>Judy ate $\frac{1}{8}$ of a pizza. Betty ate twice as much pizza from the same pie. What is the ratio of the amount of pizza they both ate to the amount of pizza remaining expressed as a fraction $\frac{a}{b}$?</p>	Grid In
<p>29. (Challenge Level)</p> <p>A gallon contains 8 pints. Each pint contains 2 cups. How many cups are in a 10 gallon jug of water?</p>	Grid In
<p>30. (Challenge Level)</p> <p>Jon works 4.5 hours a day, 3 days each week after school. He is paid \$7.25 per hour. How much is the weekly pay (rounded to the next highest cent) ?</p>	Grid In

SHSAT Lesson #7 Homework: Unit Rates, Ratio Notation

<p>1. One round trip ticket costs \$12.00, but a commuter can buy 20 round trip rides in a pack for \$200. How much is saved buying the whole pack?</p>	<p>A. \$20.00 savings B. \$24.00 savings C. \$28.00 savings D. \$32.00 savings E. \$40.00 savings</p>
<p>2. Soda costs \$2.40 for a 32 ounce can. How much is the cost per ounce?</p>	<p>A. 5.5 cents per ounce B. 6.5 cents per ounce C. 7.5 cents per ounce D. 8.5 cents per ounce E. 9.5 cents per ounce</p>
<p>3. Caviar Ketchup is very fancy and costs \$24.00 for 16 ounces. What is the cost per ounce?</p>	<p>A. \$1.50 per ounce B. \$2.00 per ounce C. \$3.00 per ounce D. \$1.25 per ounce E. \$1.20 per ounce</p>
<p>4. There are 45 dogs for every 15 cats. What is the ratio of cats to dogs?</p>	<p>A. 1:5 B. 9:5 C. 3:1 D. 1:3 E. 5:9</p>
<p>5. Lefty walks fairly fast, at 240 feet per minute. How many inches does he walk each second?</p>	<p>A. 24 B. 36 C. 48 D. 60 E. 72</p>
<p>6. Garlic Bulb USB drives come in three sizes: 8G, 16G and 64G. The costs \$12, \$20, \$32 respectively. How much does it cost for each gigabyte of storage {small, medium, large} ?</p>	<p>A. { \$1.50, \$1.25 and \$0.47 } B. { \$1.50, \$1.25 and \$0.50 } C. { \$0.67, \$0.80 and \$2.00 } D. { \$1.25, \$1.50, and \$0.47 } E. { \$0.75, \$1.25, and \$2.50 }</p>

SHSAT Lesson #7: Homework (EASY LEVEL)

<p>7. There are red marbles and green marbles in a bag. If the ratio of the number of red marbles to the number of green marbles is 7:8, what could be the TOTAL number of marbles in the bag?</p>	<p>A. 12 B. 13 C. 19 D. 23 E. 30</p>
<p>8. Tickets to the nutcracker ballet cost \$139 each. How much is it for 2 tickets at 30% discount each ?</p>	<p>A. \$222.40 B. \$218.00 C. \$194.60 D. \$97.30 E. \$81.40</p>
<p>9. Kookie Keys cuts keys for customers for 10 for \$8.50. Master Lock Stock makes them for 8 for \$8.00. How much cheaper is Kookie Keys per key?</p>	<p>A. \$0.10 per key B. \$0.15 per key C. \$0.20 per key D. \$0.25 per key E. \$0.30 per key</p>
<p>10. If prinkles potato chips are \$1.50 for 75 chips, what is the cost for 30 potato chips?</p>	<p>A. \$0.40 B. \$0.50 C. \$0.60 D. \$0.70 E. \$0.80</p>
<p>11. There are 34 students in the class. Which of the following could be the ratio of boys to girls in the class?</p>	<p>A. 2:17 B. 5:13 C. 8:15 D. 15:19 E. 7:4</p>
<p>12. Melina's ratio of 2 point shot attempts to 3 point shot attempts was 4:1. What percent of Melania's attempted shots were 3 point shots?</p>	<p>A. 20% B. 25% C. 40% D. 75% E. 80%</p>

SHSAT Lesson #7: Homework (MID LEVEL)

13. If $B = \sqrt{28 - (-131)}$, then B is	<p>A. A number between 9 and 10 B. A number between 10 and 11 C. A number between 11 and 12 D. A number between 12 and 13 E. 13</p>
14. Ann can solve 48 problems in 12 minutes. Betty can solve 24 problems in 8 minutes. How many problems can they solve together in 30 minutes?	<p>A. 35 problems B. 42 problems C. 70 problems D. 140 problems E. 210 problems</p>
15. The soup store buys 4 cans of vegetable soup for every 9 cans of chowder. If the store ordered 144 cans of chowder, how many cans of vegetable soup did they order that month?	<p>A. 144 B. 120 C. 80 D. 72 E. 64</p>
16. Two sports cars were traveling 630 miles. Car A traveled an average speed of 70 miles per hour. If Car B traveled 90 miles per hour, how many miles had Car A traveled when Car B arrived at the destination?	<p>A. 140 B. 490 C. 700 D. 630 E. None of these.</p>
17. A gallon of garden weed killer costs \$33.97, but if you buy 4, you get 1 free. How much does 10 gallons of weed killer cost, using this discount?	<p>A. \$305.73 B. \$271.76 C. \$254.78 D. \$237.79 E. \$220.81</p>
18. Which of the following could be the sum of exactly three consecutive integers?	<p>A. 98 B. 198 C. 298 D. 398 E. 998</p>

SHSAT Lesson #7: Homework (CHALLENGE LEVEL)

<p>19. Which of the following expressions is closest to 1 ?</p>	<p>A. $\frac{3}{4} + \frac{1}{2}$ B. $\frac{1}{3} + \frac{2}{5}$ C. $\frac{2}{3} + \frac{1}{2}$ D. $\frac{2}{5} + \frac{2}{3}$ E. $\frac{1}{3} + \frac{4}{5}$</p>
<p>20. A trail mix consists of 2 pounds of dry fruits costing \$1.00 per pound and 3 pounds of nuts costing \$1.60 per pound. What is the price of 1 pound of this trail mix?</p>	<p>A. \$1.24 B. \$1.36 C. \$1.44 D. \$1.56 E. \$1.68</p>
<p>21. One ticket to see the Rubbish Stomperz costs \$80. How much is saved by getting the same day \$20 at 20 (Unsold tickets available 20 minutes to curtain on show day) in percentage of the original price ?</p>	<p>A. 80% B. 75% C. 60% D. 35% E. 25%</p>
<p>22. One of the following numbers is the product of a three-digit number and a four-digit number. Which is it?</p>	<p>A. 22,146 B. 745,691 C. 10,000,001 D. 803,024,559 E. 257,654,228,931</p>
<p>23. Circles A and B touch but do not overlap, as shown. The area of circle A is 9π and the area of circle B is 16π. What is the area of the smallest circle that can contain the entire shaded figure ?</p>	<p>A. 25π B. 36π C. 49π D. 64π E. 196π</p>
<p>24. A car travels 60 kilometers in one hour before a piston breaks, then travels at 30 kilometers per hour for the remaining 60 kilometers to its destination. What is the car's average speed in kilometers per hour for the entire trip ?</p>	<p>A. 20 B. 40 C. 45 D. 50 E. 60</p>

SHSAT Lesson #7: Homework: Grid In Questions (ALL LEVELS)

<p>25. (Easy Level)</p> <p>There are 10 red pencils for every 3 green pencils in a basket. How many pencils are there total if there are 12 green pencils ?</p>	Grid In
<p>26. (Easy Level)</p> <p>Simplify: $2(x - y)^2$ when $x = 7$ and $y = 3$</p>	Grid In
<p>27. (Mid Level)</p> <p>There are 40 cars for every 8 buses. There are 3 buses for every 5 trucks. How many cars are there per bus?</p>	Grid In
<p>28. (Mid Level)</p> <p>A gallon contains 8 pints. Each pint contains 2 cups. How many cups are in a 50 gallon water barrel ?</p>	Grid In
<p>29. (Challenge Level)</p> <p>Judy ate $\frac{2}{8}$ of a pizza. Betty ate twice as much pizza from the same pie. What is the ratio of the amount of pizza they both ate to the amount of pizza remaining expressed as a ratio $\frac{a}{b}$?</p>	Grid In
<p>30. (Challenge Level)</p> <p>Sheila cuts a 60 foot wire cable in equal lengths of $\frac{3}{5}$ of a foot each. How many pieces does she make ?</p>	Grid In

JW2542 for Chang Learning 2023 (Set F)