**Fractions and Decimals**

1. Adding = 1. There are eight s, so the total is 1 + 1 = 2 **(B)**

2. **(A)**

3. The tenths place is the first number after the decimal. The hundredths place is the second number after the decimal. The thousandths place is the third number after the decimal. The ten-thousandths place is the fourth number after the decimal. Thus, 5 ten-thousandths is 0.0005 **(C)**

4. $144.99 - $126.20 = $18.79 **(E)**

5. Putting both values in inches, Phineas wants the robot to be 6.25×12=75. The average between 75 and 60.5 is 67.75 **(A)**

6. Using common denominators, **(C)**

**Number Fun**

7. The first two numbers in the pattern, 2 and 4, differ by 2. The second and third numbers in the pattern, 4 and 8, differ by 4. The third and fourth numbers, 8 and 14, differ by 6. The fourth and fifth numbers, 14 and 22, differ by 8. The fifth and sixth numbers, 22 and 32, differ by 10. The sixth and seventh numbers in the pattern should differ by 12, the next even number.

32 + 12 = 44 **(B)**

8. We can solve this by looking at the last digit of 39, which is 9. The last digit of 39 x 39 is 1, since the last digit of 9 x 9 = 81 is 1. The last digit of 39 x 39 x 39 is 9, since the product of

39 x 39 ends in 1, and 1 times the last digit of 39 is 9. The last digit of 39 x 39 x 39 x 39 is 1, since the product of 39 x 39 ends in 1, and 1 x 1 = 1. The last digit of39 x 39 x 39 x 39 x 39 is 9, since the last digit of 39 x 39 x 39 x 39 is 1, and 1 x 39 = 9 **(D)**

9. Since

**(B)**

10. Since it takes 24 minutes for 6 people to paint 6 fences, and everyone paints at the same rate, it takes 24 minutes for 1 person to paint 1 fence. In other words, each person will finish painting a fence in 24 minutes. Thus, for 9 people to paint 9 fences, it will also take 24 minutes **(A)**

11. The growing plant doubles in height every day, which means that the height of the plant the yesterday is half of the plant’s height today. If the plant grows to be 100 feet today, then yesterday it was 50 feet tall. If the plant was 100 feet tall on the 20th day, then it was 50 feet tall the previous day, the 19th day **(E)**

12. For the number to be divisible by 6, it must be divisible by both 2 and 3. Using divisibility rules, the only number divisible by 2 (last digit is even) and divisible by 3 (all digits add up to a multiple of 3) is 9414 **(D)**

**Arithmetic**

13. **(B)**

14. For 2 adults, the movie tickets cost 2 x$8 = $16, and for 3 children, they cost 3 x $5 = $15.

$16 + $15 = $31 **(C)**

15. The first row has 9 seats, so the numbers of seats in the subsequent rows are 10, 11, 12, 13, 14, and so on. 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 = 100, so there are a total of 8 rows **(C)**

16. By order of operations, **(D)**

17. We must solve **(D)**

18. The first four primes are 2, 3, 5, and 7. Multiplied together, we get 210 **(E)**

**Shapes**

19. The sum of all the angles in a triangle must be equal to 180°, so none of the angles in a triangle can be more than 180° **(A)**

20. There is 1 big triangle, 4 medium triangles within the big triangle, and 4 small triangles inside the middle medium triangle. This makes a total of 9 triangles **(B)**

21. The only true statement is number 2, that a square is a rhombus, so II only **(A)**

22. The volume of a rectangular prism is length width height = 15 2 X = 30X = 210 cubic cm, so X = 7 cm **(D)**

23. A dodecagon has 12 sides **(C)**

24. A triangle with side lengths 3, 4, and 5, is a right triangle with 3 and 4 as its legs. Its area would be **(B)**

**Clocks and Calendars**

25. There are 7 days in a week, so the days of the week are repeated every 7 days. If today is Tuesday, then after 7 days it will be Tuesday again. This means that it is Tuesday after 7, 14, 21, 28, 35, 42, and 49 days, so it is Wednesday after 50 days **(B)**

26. After 3 days, the clock will lose 20 x 3 = 60 minutes or 1 hour. To return back to the correct time, the clock must lose 12 hours, which will occur in 3 x 12 = 36 days **(C)**

27. If Candace takes the first pill at 2:30pm, she will take the 2nd pill in 45 minutes, which is at 3:15 pm. She will take the 3rd pill at 4 pm, the 4th pill at 4:45 pm, and the 5th pill at 5:30 pm **(B)**

28. Unless the minute hand is pointing at the 12, the hour hand will shift a little bit proportional to how close it is to the next hour. So, the only time the angle would be exactly 90° is when it’s exactly on the hour. Of the answer choices, the only time that satisfies the conditions is 3:00 **(A)**

29. If we add up the time Dr. Doofenshmirtz takes in the morning before setting off his laser, we get: 17+25+32+50 = 124 minutes, or 2 hours and 4 minutes. Adding this to the 9 hours and 45 minutes of sleep he must get, we get 11 hours and 49 minutes. 11 hours and 49 minutes before 9:00 am is 9:11 pm **(D)**

30. In June, there are 30 days, and in July, 31 days. In August the only days of summer are from the 1st to the 11th, or 11 full days. In total there are 72 days of summer vacation **(B)**