

1. Lilly was sitting on the edge of a seat when she was offered a very lucrative deal! A certain individual named Nellie offered her 1 loaf of bread if she gets the following question right. Given that $1 + 1 = 2$, then what is $1 + 2$ equal to? Get it right so Lilly can earn that loaf of bread!

Since $1 + 1 = 2$, we have that $1 + 2 = 1 + (1 + 1) = 1 + 1 + 1 = 3$, so the answer is $\boxed{C, 3}$.

2. Evaluate the expression

$$2 + 6 + 5 + 4 - 3 - 2 - 1 - 2.$$

This is equal to

$$17 - 8$$

so the answer is $\boxed{D, 9}$.

3. Hadriel, growing extremely jealous because of the lucrative offer Lilly was offered from the first question, decides to vent out his anger in the ocean. If Hadriel is running at 70 mph and the ocean is exactly 630000 miles away, how many hours will it take Hadriel to reach the ocean so he can take out his anger?

Use $T = \frac{D}{S}$, where T stands for time, D stands for distance, and S stands for speed. Plugging in the values given in the question, we have $T = \frac{630000}{70} = 9000$, so the answer is $\boxed{C, 9000}$.

4. The Little Mermaid was swimming in the ocean when all of a sudden she was sucked into a river that took her into inland USA! If the river is flowing at a steady 15 m/s, how far down the river will the Little Mermaid be after 1 minute? (m/s stands for meters per second)

There are 60 seconds in 1 minute, and the river is flowing 15 meters every second. $60 * 15 = 900$, so the answer is $\boxed{E, 900}$.

5. Arib, Yimo, Aaron, James, and Heebot were doing a 24 hour challenge in the Arctic. It was all fine and dandy until they realized Heebot drank their entire water supply! So they had to drink the water from the Arctic Ocean, but they needed to see if it was proper freshwater or not. If the probability that an individual will drink proper freshwater from the Arctic Ocean is $1/4$. What is the probability that all 5 of them drink freshwater?

The probability that all 5 of them will drink freshwater is $1/4 * 1/4 * 1/4 * 1/4 * 1/4 = 1/1024$, so the answer is $\boxed{B, 1/1024}$.

6. For some reason, Yimo only swims in one type of body of water. As a hint, the body of water that Yimo swims in has water in it. But if that doesn't help, here is a list that contains some examples of bodies of water: Lake Ontario, Lake Erie, Lake Superior, Lake Michigan, Lake Huron, and Lake Monkey. Given that the body of water that Yimo swims in is one of the Lakes given above, what is the probability that you choose the right lake that Yimo will swim in?

There are 6 lakes to choose from and 1 right answer, so the probability is $\boxed{C, 1/6}$.

7. The Little Mermaid ended up in a freshwater lake when all of a sudden she was approached by a weirdly shaped manatee. Its tail was in the shape of a triangle! If the base is 3 inches long and has a height of 2 feet, what is the area of the tail in square inches?

The formula for the area of a triangle is $\frac{1}{2}bh$, where b stands for base and h stands for height. In this question, the base is 3 inches and the height is 2 feet, or 24 inches. Plugging these values into the formula, we have $\frac{1}{2}(3)(24) = 36$, so the answer is $\boxed{A, 36 \text{ inches}^2}$.

8. In the lake, there were 3 turtles on Monday, 6 turtles on Tuesday, and 9 turtles on Wednesday. If this pattern continues, how many turtles will there be on Thursday?

The pattern is that 3 is added to reach the number of turtles on the next day. Since there were 9 turtles on Wednesday, there will be $9 + 3 = 12$ turtles on Thursday, so the answer is $\boxed{D, 12}$.

9. One day, Hadriel asked Lilly what her favorite plant was, and she said water lillies, (She's very predictable) so Hadriel said if she could solve the following problem he would buy her a cake shaped like a water lily! What is $4/3$ divided by $28/15$?

Dividing by a fraction is the same as multiplying by its reciprocal. Rewriting the problem, we have $4/3 \cdot 15/28 = 5/7$, so the answer is $\boxed{B, \frac{5}{7}}$.

10. Aaron, Cyrus, Linsey, Hadriel, Arib, James, and Nima decided to buy the cake for Lilly since she got the question right. They went to Tate's Bakery and chose their cake which cost a whopping \$168! Only Hadriel brought money so he paid the entire amount. Hadriel, furious because he told all of them to bring their own money, demands interest from them. If they all owe Hadriel the amount they should've paid (given everyone split the price evenly) plus 12% interest, how much does each person end up paying Hadriel?

There are 7 people in total, so the principal amount (the initial amount of money each person would've paid had all of them split the bill equally) is $168/7 = 24$. The amount after 12% interest is $24 \cdot 1.12 = 26.88$, so the answer is $\boxed{C, \$26.88}$.

11. After everyone paid Hadriel, they started to eat the cake! If Aaron ate $1/5$ of the cake, Cyrus ate $1/4$, Linsey ate $1/10$, Hadriel ate $1/4$, Arib ate $1/10$, Lilly ate $1/20$, how much did Nima eat if no cake was left for James after Nima took his piece?

$1 - 1/5 - 1/4 - 1/10 - 1/4 - 1/10 - 1/20 = 1/20$, so the answer is $\boxed{D, 1/20}$.

12. An iceberg in central Antarctica has a volume of 2023 cubic feet. Which of these is a factor of 2023?

The factors of 2023 are 1, 7, 17, 119, 289, and 2023. Looking at the choices, the answer is $\boxed{B, 17}$.

13. Oh no, the Little Mermaid is in trouble! An alligator, initially 10 meters behind the Little Mermaid, started to chase her! If the alligator and the Little Mermaid are traveling in the same direction and the alligator is swimming at a constant speed of 5 m/s towards the Little Mermaid while the Little Mermaid is swimming at a constant speed of 8 m/s, how far apart will they be after 5 seconds? (m/s stands for meters per second)

Every second, the Little Mermaid and the alligator grow apart by $8 - 5 = 3$ meters. So after 5 seconds, they would have grown $5 \cdot 3 = 15$ meters apart. Add this to their initial distance apart, 10 meters, and we get $\boxed{D, 25 \text{ meters}}$.

14. After eating the cake, Nima and Hadriel went to the lake. At the lake, they spotted 33 red fish and 12 green fish. What is the product of 33 and 12?

$33 \cdot 12 = 396$, so the answer is $\boxed{E, 396}$.

15. Lilly got a pet fish that has very specific needs. It can only survive in a solution that is 1% salt. If Lilly has a 500 mL solution that is 2% salt, how much pure water does she need to add to dilute it to 1% salt?

To dilute the solution to half the original concentration, the total volume needs to be doubled. This means adding 500 mL of water, so the answer is $\boxed{A, 500 \text{ mL}}$.

16. In order to be completely safe from that mean alligator, the Little Mermaid decided to go to a different lake. She wants to pick out an outfit to give a good first impression to the fish she will meet in the new lake. She has 2 shirts, 3 tail colors, and 2 hats to choose from. How many distinct outfits can she make from these? (One outfit consists of one shirt, one tail color, and one hat.)

$2 \cdot 3 \cdot 2 = 12$, so the answer is $\boxed{B, 12}$.

17. At the new lake, the Little Mermaid found a leaf in the shape of a rectangle. The length of the leaf is 5 inches and the width is 3 inches. Find the area of the leaf.

The formula for the area of a rectangle is lw , where l stands for length and w stands for width. Plugging in the values given in the question, we have $5 \cdot 3 = 15$ so the answer is $\boxed{A, 15 \text{ inches}^2}$.

18. Lilly's pet fish is very hungry. One day, it ate 1 fish pellet. The next day, it ate 2 fish pellets. If this pattern of eating one more fish pellet than the day before continues for 5 more days, how many fish pellets would Lilly's pet fish have eaten in total by the end?

$$1 + 2 + 3 + 4 + 5 + 6 + 7 = 28, \text{ so the answer is } \boxed{A, 28}.$$

19. Evaluate the expression

$$2^5 - 3 + 10 - 7$$

$$\text{We have } 2^5 = 32, \text{ so } 2^5 - 3 + 10 - 7 = 32 - 3 + 10 - 7 = 32 \text{ and the answer is } \boxed{D, 32}.$$

20. Hadriel finds a fish egg shaped like a sphere. He measures the radius of the fish egg to be 6 cm. Assuming the fish egg is a perfect sphere, calculate its volume in terms of pi.

$$\text{The volume of the sphere is } \frac{4}{3}\pi \cdot 6^3 = 288\pi, \text{ so the answer is } \boxed{C, 288\pi \text{ cm}^3}.$$

21. Arib, Yimo, Aaron, and James are planning to build a boat. They need 30 planks of wood. If the store only sells planks of wood in packs of 4, what is the least number of packs Arib, Yimo, Aaron, and James need to buy to have enough materials?

Home Depot only sells planks of wood in packs of 4, 7 packs have 28 planks and 8 packs have 32 planks, so they need to buy at least 8 packs, so the answer is $\boxed{E, 8}$.

Use the following information for questions 22-24:

Lillian's Ice Cream store was voted one of the best ice cream parlors in all of Fresco Francesco Francisco Frankville Franklin Freshwater City. The parlor offers chocolate, strawberry, vanilla, and mint ice cream. The parlor also offers fifteen distinct toppings. The first scoop of ice cream costs \$3.50, and each additional scoop is \$1.50. The toppings are \$0.15 each.

22. How many distinct ice cream servings can Hadriel get if he wants one scoop of ice cream and one topping?

$$\text{There are 4 choices for ice cream and 15 choices for toppings, } 4 \times 15 = 60, \text{ so the answer is } \boxed{C, 60}.$$

23. Jim decides he wants to get an ice cream cone with 6 scoops of ice cream and 14 toppings. What is the cost of his order?

$$\$3.50 + 5 \cdot \$1.50 + 14 \cdot \$0.15 = \$13.10, \text{ so the answer is } \boxed{A, \$13.10}.$$

24. After much consideration, Lilly decides to buy two scoops of chocolate ice cream with no toppings. She is very happy with her ice cream choice, but she is surprised when she sees that her friend paid a lot more for his cone. Her friend ordered one scoop of each flavor and all the toppings. How much more did Lilly's friend pay?

$$\text{Lilly ordered 2 scoops of ice cream and 0 topping. Her friend ordered 4 scoops of ice cream and 15 toppings, the difference in cost is } 2 \cdot \$1.50 + 15 \cdot \$0.15 = \$5.25, \text{ so the answer is } \boxed{D, \$5.25}.$$

25. Hadriel's friend Djökščkšh decides that she also wants some ice cream, but she is always looking for ways to save money and be as cheap of a cheapskate as possible. Djökščkšh will only buy the ice cream if the volume of the cone is larger than 60 cm^3 . If the top of the cone has a diameter of 7 cm and the height of the cone is 6 cm, what is the volume of the cone? Use $22/7$ as an approximation for the value of π .

The volume of the cone is equal to

$$\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi \cdot \left(\frac{7}{2}\right)^2 \cdot 6 \approx \frac{1}{3} \cdot \frac{22}{7} \cdot \frac{49}{4} \cdot 6 = 77,$$

$$\text{so the answer is } \boxed{C, 77 \text{ cm}^3}.$$

26. A pond has been polluted and the number of turtles in the pond decreases every year. Find the missing number in the following sequence that represents the number of turtles in the pond each year from 2011 to 2016: 69, 57, 45, ??, 21, 9.

The number of turtles decreases by 12 per year, so the answer is $\boxed{C, 33}$.

27. A pond has a circle shape with a radius of 35 meters. Find the circumference of the pond, using $22/7$ for π .

The circumference of the pond $= 2\pi r = 2 \cdot \frac{22}{7} \cdot 35 = 220$ meters, so the answer is $\boxed{B, 220 \text{ meters}}$.

28. The lengths (in feet) of 7 gators are 7 consecutive integers with the median being 7. What is the mean?

The seven consecutive integers are 4, 5, 6, 7, 8, 9, 10. The mean is 7, so the answer is $\boxed{D, 7}$.

29. When four times the weight of a turtle (in pounds) is added to 36, the result is 72. What is the weight of the turtle, in pounds?

If w is the weight of the turtle, then $4 \cdot w + 36 = 72$, and solving gives that $w = \boxed{A, 9}$.

30. Congrats on reaching the of the test! What is $4 \times 4 + 4$?

Note that $4 \times 4 + 4 = 16 + 4 = \boxed{D, 20}$.