

1. There are four oceans in the world, though some countries recognize the Southern Ocean as the fifth ocean. What is $5! - 4!$?

Since $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$ and $4! = 4 \times 3 \times 2 \times 1 = 24$, we find that $5! - 4! = 120 - 24 = \boxed{D, 96}$.

2. Hadriel is trying to catch a fish! However, instead of a fish he pulls up a small sheet of paper with a math question on it. If Hadriel gets the question right, what was his answer? The question is:

$$(1 + 20 \times 23 - 14 \div 2)0 + 2[20 \times (0 + 3)] - 1.$$

Since anything times zero is zero, this equation is equal to

$$2[20 \times (0 + 3)] - 1.$$

Solving it gets us $\boxed{A, 119}$.

3. Three sharks ate 17 fish each in a sea initially with 97 fish total. How many fish are remaining? Assume no new fish enter or leave the sea during this time.

The number of fish remaining is $97 - 3(17) = \boxed{D, 46}$.

4. A mutant octopus is found wandering the ocean. It has x appendages where x satisfies $3x = 9(x - 4)$. How many appendages does the octopus have?

We can expand the equation to $3x = 9x - 36$. Rearranging this, we find that $36 = 6x$, thus $x = \boxed{B, 6}$.

5. Nelson needs your help to build a sandcastle! Help him by solving this problem! If $2 \times 3 = 6$, then what is $2 \times 3 + 6$?

$$2 \times 3 + 6 = 6 + 6 = \boxed{A, 12}$$

6. There are 2000 sea urchins the first day in a given region in the sea, each following day that number increases by 5 sea urchins. What is the number of sea urchins on the seventh day?

The question states there are 2000 sea urchins on the first day. So, there will be 2005 urchins on the second day, 2010 urchins on the third day, 2015 urchins on the fourth day, 2020 urchins on the fifth day, 2025 urchins on the sixth day, and 2030 urchins on the seventh day, so the answer is $\boxed{B, 2030}$.

7. Katharine decides to take a boat out to sea. She rides the boat for 8092 meters. She notices that after every 4 meters she saw a fish! How many fish did she see while traveling in the sea?

8092 is the total distance traveled, it is given that every 4 meters there is a fish. Therefore, dividing 8092 by 4 will give the number of times a fish is seen. Then the answer is $8092/4 = \boxed{C, 2023}$.

8. Linsey times Katharine as she swims 4 meters out into the sea. She yells at Katharine that she took 20 seconds to finish swimming the 4 meters. What was Katharine's average swimming speed in simplest form? All answers are in meters/second.

Since finding speed is given by $\frac{\text{distance}}{\text{time}}$, plugging in 4 meters and 20 seconds gives $\frac{4}{20}$ is the answer, but simplifying it gives $\boxed{B, 1/5}$ meters/second.

9. A dolphin is swimming to a lighthouse. If the distance from the dolphin to the lighthouse is $7x - 40$ where $x = 36$, how far does the dolphin have to swim?

The given value of x is 36, by plugging in the x in the expression, the expression becomes $7(36) - 40$. By the order of operations, multiplying $7 \times 36 = 252$, subtract 40 from that number to find 212. Therefore the solution is $\boxed{D, 212}$.

10. There is a group of 10 eels in the ocean. The group of eels find a mass of 6 fish. Every minute, one additional fish joins the mass of fish. After 2040 seconds, the eels ate all the fish, with each eel eating an equal amount of fish. How many fish did each eel eat?

First find how many minutes passed, which is found by 2040 seconds divided by 60 seconds, to calculate 34 minutes. Therefore 34 fish are added to the original 6 fish since the problem states one fish joins the group every minute. So the total fish is 40. It's given that each eel eats the same amount of fish, thus $40 \div 10$ (the number of eels) gives the amount of 4. So, the answer is $\boxed{A, 4}$.

11. A boat is 6 miles from shore and is traveling at a constant 2 mph back to shore. How long does it take to reach the shore, in minutes?

Given that the boat is 6 miles off shore and travels 2 mph dividing 6 by 2 gives the amount of travel time of 3 hours. Since the question states the amount of time in minutes, multiply 60 by 3 to find 180 minutes. Therefore, the answer is $\boxed{D, 180}$.

12. Aaron finds a beach with many turtle eggs. He counts 316 hatched eggs and 896 unhatched eggs, how many turtle eggs are there in total before the eggs hatched? Assume that the hatched turtles remain in the hole, and no eggs disappear.

Finding the total number of eggs is found by adding 316 and 896, both given. Adding those will result in 1212. So the answer is $\boxed{D, 1212}$.

13. In an area of the ocean, there is 6 times the number of kelp compared to otters. In that area, the animal species there consists of only otters and sea horses, where there are 3 times as many sea horses compared to otters. If there are 423 sea horses, then what is the total number of kelp in that area?

First find the number of otters by dividing 423 by 3, since there are 3 times less otters compared to sea horses. The outcome is 141, since kelp is 6 times the number of otters, multiplying 141 by 6 gives the amount of kelp, which is 846. Therefore the solution is $\boxed{A, 846}$.

14. Shaoyang comes across a giant squid that blocks his path! The squid tells him that if he can answer the following question correctly, it will let him through. If $x = \frac{2}{5}$, and y is 0.6, what is x times y as a common fraction?

To solve this, make 0.6 into the fraction $\frac{6}{10}$, then simplify it for it to become $\frac{3}{5}$. Then multiply $\frac{2}{5}$ by $\frac{3}{5}$ to find $\frac{6}{25}$. So, the answer is $\boxed{C, \frac{6}{25}}$.

15. IS THAT A MERMAID? Yimo swims toward the mermaid and sees that it has a tail made of one isosceles triangle and two congruent equilateral triangles. If the isosceles triangle has a 13 inch base and 20 inch height and the equilateral triangles have 2 inch sides, what is the area of the mermaid's tail in square inches? Assume the mermaid's tail is 2-dimensional.

First, find the area of the isosceles triangle by solving $(13 \times 20)/2$ which is 130. For the equilateral triangle, the height needs to be determined. To do so, if a line is drawn through the center of the triangle from one point to the other side and the triangle is split into two, each one is a "30-60-90" triangle. Therefore, the height of the triangle can be determined by $x\sqrt{3}$ as part of a property of that triangle. x is 1 because the side length given as 2 in half is 1. So, the height of the equilateral triangle is $\sqrt{3}$. Since the height is found, the area of that triangle is $(2 \times \sqrt{3})/2$ which is $\sqrt{3}$. Multiplying that by 2 gives the total area of both equilateral triangles.

Then, adding that area to the other area of the isosceles triangle is $130 + 2\sqrt{3}$, so the answer is $\boxed{A, 130 + 2\sqrt{3}}$.

16. Kanye West in having a concert in the Atlantic Ocean! To prepare, he needs to buy a spherical helmet so he can breathe underwater. If the diameter of the helmet is 18 inches, what is the volume of Kanye's helmet in cubic inches?

Since the diameter of the helmet is 18 inches, the radius is 9 inches. Plugging this into the formula $V = \frac{4}{3}\pi r^3$ gets us $V = \boxed{C, 972\pi}$.

17. Kanye's performance has started! His songs are 3.4, 2.7, 2.9, 4.2, 3.8, 4.5, 1.7, 2.6, 3.6, 3.5, 2.9, 5.3, and 2.9 minutes long. On average, how long were each of Kanye's songs? Round to the nearest tenth.

To find the average length of the songs, we add the lengths of the songs together and divide by the total number of songs. We find the sum of the lengths to be 44 and the total number of songs to be 13. By dividing $44 \div 13$ and rounding to the nearest tenth, we find the average length of the songs to be $\boxed{B, 3.4}$.

18. Kanye brought DJ Khaled out as a surprise! James wants to calculate how many diamonds DJ Khaled is wearing by using the equation $(3x - 18)5 = 15$, where x is the number of diamonds. How many diamonds is DJ Khaled wearing?

By expanding the equation we get that $15x - 90 = 15$. Simplifying this, we find that $15x = 105$ and $x = \boxed{D, 7}$.

19. A school of fish includes 4 different colored fish. There are 12 red fish, 6 yellow fish, 9 green fish, and 13 orange fish. A predator fish comes to eat a fish at random. What is the probability it eats an orange fish?

By adding $12 + 6 + 9 + 13$, we find the total number of fish in the school of fish to be 40. Because there are 13 orange fish, the probability of selecting a orange fish is $\frac{13}{40}$. Therefore, the answer is $\boxed{D, \frac{13}{40}}$.

20. Nima is able to catch 12 shrimps per hour and he starts at 6 A.M. one day and ends at 8 A.M. the next day. He also takes a one hour break at 9 A.M., 2 A.M., and 8 P.M. each. How many shrimps did he catch within 6 A.M. and 8 A.M.?

The total amount of time between 6am and 8am is 26 hours. Nima takes a break for a total of 3 hours (1 hour at 9am, 2pm, and 8pm), so, the amount of time spent catching shrimp is 23 hours. Since Nima can catch 12 shrimps per hour, multiplying that number by 23 will give the total amount of shrimp caught by him between 6am and 8am. $12 \times 23 = 276$, therefore the answer is $\boxed{B, 276}$.

21. Linsey walks along the beach holding a 14 inch string. She collects seashells to make a necklace, a big shell being 2.5 cm, and 1.25 cm for a small shell. She wants 1 more small shells than big shells, how many of each should she collect to make a whole necklace? Assume that 1 in = 2.5 cm.

Find the amount of string in cm by $14 \times 2.5 = 35$, then find the average number of size of shells to fit on the string by adding 2.5 and 1.25 to get 3.75, then divide by 2 for it to be 1.875. $35/1.875$ will find the number of shells that can fit, turning out to be 18.66... but there can only be a whole amount of shells, so round it up to 19. Since Linsey wants 1 more small shell compared to big shells, dividing 19 into 10 and 9 will give the number of each size. Therefore the answer is $\boxed{A, 10 \text{ small}, 9 \text{ big}}$.

22. Arib is floating on a pink inflatable tube looking into the seawater at the beach. He sees a massive group of fish of 6 different colors. Two of the colors had 12 fish each, three of the colors had 15 fish each, and the last color had twice the number of the other colors combined. How many fish did Arib see in total?

By solving 12×2 to find the number of fish for two colors. Then 15×3 to find the total for three colors. The answer is 24 and 45 respectively. Combining the two totals will give 69, then since the last color has double the that total, solving 69×2 gives the number for that last color which is 138. Then $138 + 69 = 207$ gives the total number of fish, therefore $\boxed{C, 207}$

23. A seahorse gave birth to 560 offspring, in the first week 25 percent gets eaten, then in the second week, 30 percent of the remaining offspring gets caught in the current and get lost and die. How many of the offspring survive after the two weeks?

Get 25 percent of 560, $560 \times 0.25 = 140$ then $560 - 140 = 420$ for the remaining offspring after the first week. $420 \times 0.3 = 126$ for 30 percent during the second week, then $420 - 126 = 294$ for the end of the second week to find the survivors. Therefore, $\boxed{C, 294}$

24. Nonoko finished snorkeling at 2:30 P.M. She tells her friend Katharine that she saw 12 fish, 2 turtles, and 1 octopus during her adventure. She also said she saw one fish every five minutes, saw the turtles 10 minutes after seeing the last fish, and saw 1 octopus an hour after seeing the turtles, getting out right after. What was the time when she saw the sixth fish?

Going backwards starting from 2:30 P.M., the time she saw the turtles is 1:30 P.M. because she saw the octopus an hour after them. She saw the last fish at 1:20 P.M. because she saw the turtles 10 minutes after, then 6 fish out of 12 means she took $6 \times 5 \text{ min} = 30 \text{ min}$, so 12:50 P.M. Therefore she saw the sixth fish at 12:50 P.M. The answer is $A, 12 : 50 \text{ P.M.}$

25. A coral is made up of 6 equivalent cylinders, and its total volume is 360π cubic cm. What is the radius (in cm) of each cylinder if their heights are 4 cm?

Divide the total volume of 360π by 6 to find the volume of one cylinder, $360\pi/6 = 60\pi$. Then the volume of a cylinder is found by $h \times r^2 \times \pi$, plugging numbers in to get $4 \times r^2 \times \pi = 60\pi$. Solving for r becomes $r^2 = \frac{60\pi}{4\pi}$, then $r = \sqrt{\frac{60\pi}{4\pi}} = \sqrt{15}$. So, the answer is $B, \sqrt{15}$

26. David's dream is to sail the seven seas! To do so, he must buy a boat. A boat costs \$500 and David has a magic dollar that is worth one dollar on the Day 1 and doubles in value each subsequent day. On what day number will David first be able to buy the boat?

For David to afford the boat, the value of the coin must be greater than that of the boat. Since the boat costs \$500, the coin must be worth \$500 or more. To solve for the price of the coin on a given day, it equals the price of the coin on the first day times 2 raised to the power of the number of days minus 1, or $P_n = P_1 \times 2^{n-1}$ where P_n is the price on day n . Solving for the first day that yields a price greater than or equal to \$500, we find that $1 \times 2^9 = 512$, so $n - 1 = 9$, and $n =$ $E, 10$.

27. While sailing the seven seas, David finds a strange current that flows in a perfect circle. If this circular current has a circumference of 50π , what is the area of the circle formed by the current?

Since the circumference of the circle is 50π , we know via $C = 2\pi r$ that the radius of the circle is equal to 25. Plugging 25 in as the radius into $A = \pi r^2$ gets the area of the circle as $C, 625\pi$.

28. Shaoyang is going to the beach! He decides to bring one set of clothes with him consisting of a hat, a shirt, a pair of pants, a pair of socks, and a pair of shoes. If he has 2 hats, 5 shirts, 4 pairs of pants, 6 pairs of socks, and 1 pair of shoes, how many different combinations of clothing can he make?

To find the total possible sets of clothes Shaoyang can make, we multiply together the amount of each type of clothing he has. Thus, $2 \times 5 \times 4 \times 6 \times 1 =$ $D, 240$.

29. James has a 5 liter sample of water which is 20% saltwater and 80% non-saltwater. If he wants to make a solution that is 50% saltwater by adding in some 100% saltwater, how many liter(s) of saltwater must he add?

Since 20% of 5 liters is 1 liter, there is 1 liter of saltwater and 4 liters of non saltwater. For the solution to be 50% saltwater, the amount of saltwater in the solution must equal the amount of non saltwater. Since there is currently 4 liters of non saltwater and 1 liter of saltwater, the amount of 100% saltwater he should add is $C, 3$.

30. Last question! Which of the following animals do not (typically) live in the ocean?

Monkeys do not typically live in the ocean, thus the answer is B, monkey .