1.

Following PEMDAS, first we do the division in the middle:

After this we get , which simplifies down to , which is 55 **(C)**

2. minutes **(D)**

3. Area base height

= 12 ft2 **(B)**

4. Convert the fractions to decimal.

= 0.3333, = 0.2857, = 0.2142, 0.125

The largest fraction here is , so **(B)**

5. Range largest number in data set smallest number in data set

Median = middle number in ordered data set

6, 7, 7, 8, 8, **9**, 9, 9, 10, 11, 12

**(D)**

6. To write a mixed number, divide the numerator by the denominator, write down the whole number answer, then write down any remainder above the denominator.

For : with a remainder of 11, so **(B)**

7. A fish is caught every 50 minutes. 50 minutes 3 150 minutes later.

= 2 hour and 30minutes later, or 5:30 PM **(B)**

8. seeds sprouted

white magnolias

pink magnolias

, where x is the number of Bergenia seeds planted.

**(D)**

9. 4 8 = 32 m2

32 2 = 64 lilies

64 5 = 320 water bugs **(C)**

10. Volume of rectangular prism = base length height

4 8 2 = 64 m3

Since she explores 4 m3 every day, it takes = 16 days.**(B)**

11. Add one to all the answer choices. They become 99, 754, 1249, and 2718.

To be a multiple of six a number must be divisible by both 2 and 3. A number is divisible by 2 if it’s even and divisible by 3 if all its digits add up to a number divisible by 3.

Only 2718 is divisible by both 3 and 2, so **(D)**

12. Notice, 30 60 = 90, 31 59 = 90, 32 58 = 90, and so on. This gives us

30 31 33 34 35 … 59 60 (60+30) 1395 **(D)**

13. Statement III is false because 111 is divisible by 3. Statements I and II are true **(C)**

14. Using the sphere volume formula, , all we need to do it plug in the radius of the given sphere, which is . Doing so, we get:

Multiplying everything out, we get which reduces down to . Since she needs 4 to digest and single leaf and there are 6 leaves,  **(C)**

15. The greatest common factor of and is . The sixth smallest prime number is 13 (2, 3, 5, 7, 11, **13**). 14 13 27 **(E)**

16. The next time the Tarbosauruses snap at each other in unison again is the least common multiple of all the time intervals between each Tarbosaurus’s snap. To find the LCM, convert all the times to seconds. 3 minutes and 45 seconds = 225 seconds, 2 minutes = 120 seconds, 50 seconds. Then find the prime factors of each number:

225: 5, 5, 3, 3

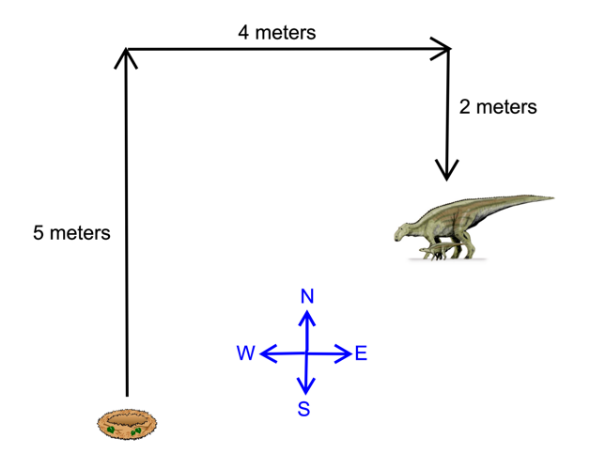
120: 5, 3, 2, 2, 2

50: 5, 5, 2

Multiply each prime factor (5, 3, 2) the greatest number of times it occurs among the three numbers.

LCM = 52 32 23 = 1800 seconds = 30 minutes **(A)’**

17. Baby Maiasaura’s path:



Use the Pythagorean Theorem to find the distance from the nest to the Mama Maiasaura:

**(B)**

18. After one full day the Edmontonia dinosaur will climb a net of 35 feet up (45 10 = 35). After the 14th day, she will have climbed up 490 feet (35 14 490). On the 15th day she will climb up an additional 45 feet, reaching the mountain’s top (490 45 = 535) before sliding down as she usually does. That means she reaches the mountains top on the 15th day **(B)**.

19.

**(D)**

20. The pattern is that the number of meteors seen the next night is the sum of the number of meteors seen from the last two nights. Notice, Continued, the pattern leads to **(A)**

21. 110 feet = 1320 inches

**(D)**

22. The average of the first three Brachiosauruses heights, calling them *a, b,* and *c* is

. .

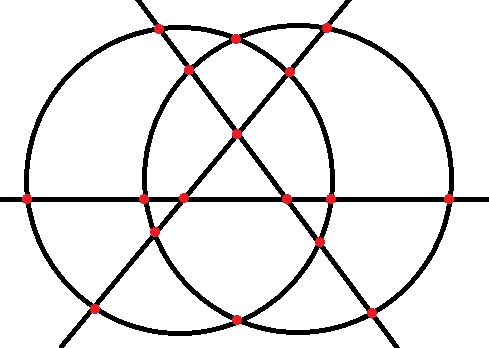
The new average of the group, calling the new Brachiosaurus’s height *x*

= 30. Plugging in 87 for a b c here, we get = 30. Solve for x, and we get the new dinosaur’s height is 33 feet **(B)**

23. The only regular polygon with 60 degree angles is an equilateral triangle **(E)**

24. The dragonfly doubles its mass every day. If its mass was 160 grams on day 16, this means that its mass must have been 80 grams on day 15. The dragonfly would have had a mass of 40 grams on day 14, continuing this pattern of halving the mass for each day we go back. **(D)**

25. The maximum number of intersections happens when each line intersects the other two lines once and each circle twice. Lines with lines: 3 total intersections, Lines with circles: total intersections, and finally the circles touching each other twice for a total of **(A)**

****

26. Draw and fill out a venn diagram. 35 Dryosauruses both honked and run away, so put that into the center of the venn diagram. 15 Dryosauruses *only* ran away (50 – 35) and 43 *only* honked (78 – 35). Put 15 and 43 in the sides of the circles. The rest of the Dryosaurus herd (the ones that neither honked nor ran away) recognized the large dinosaur was only a Muttabarruasaurus. So add up all the numbers in the venn diagram and subtract that from 179.

179 – (15 35 43) = 86 **(C)**

27. The velociraptor is catching up at a rate of 30-20=10mph. She needs to catch up 15 miles, so the time needed is 15/10=1.5 hours=90 minutes. **(C)**

28. 27 km = 18 min for the Pterodactyl to finish the race

= 0.36 km/min

27 km = 75 min for the Archaeopteryx to finish the race

min **(C)**

29. Area of a rectangle =

The area of the forest = 20 km 34 km = 680 km2

Area of a circle =

Dangerous area = 3.14 22 = 12.56 km2

Safe area = area of the forest – dangerous area = km2 **(B)**

30. Use to represent the number of T-Rexes and to represent the number of Triceratops. The Diplodocus counts 14 heads, so there must be 14 total dinosaurs in the forest, so

T-Rexes stand on two legs, so the number of T-Rex legs in the forest is . Triceratops stands on 4 legs, so the number of Triceratops in the forest is . The Diplodocus counts a total of 46 legs, so

Now we have a system of equations. To solve them, we can manipulate the first equation into . Then we can substitute for in the second equation to get . Solving this equation gives us , so **(A)**