**2021 BCCTM Math Competition: Grade 6 and Grade 7 Solutions**

Franklin Middle School's 6th graders took a science test. The average score of the female students was 82, and the average score of the male students was 79. 42 girls and 38 boys took the test. To the nearest tenth, what is the average test score for the entire 6th grade?

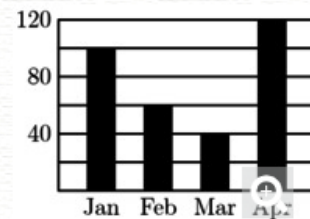○ 59.9

○ 63.4

○ 80.6

○ 75.1

○ None of these

Answer: 80.6

Today is Friday. What day of the week is it 80 days from now?

○ Monday

○ Tuesday

○ Wednesday

○ Thursday

○ None of these

Answer: Monday

Candy sales from the Boosters Club from January through April are shown. What were the average sales per month in dollars?

○ 70

○ 75

○ 80

○ 85

○ None of these



Answer: 80

**Ten tiles numbered 1 through 10 are turned face down. One tile is turned up at random, and a die is rolled. What is the probability that the product of the numbers on the tile and on the die will be a perfect square?**

○ 1/10
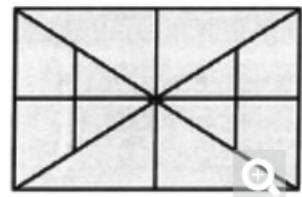
○ 1/6

○ 11/60

○ 7/30

○ None of these

Answer: 11/60

**Find the sequence and fill in the blanks: (2, 3), (4, 6), (6, 9), (8, 12) ... The 8th group is ( ___ , ___ )**

○ (12, 16)

○ (10, 14)

○ (16, 24)

○ (18, 27)

○ None of these

Answer: (16, 24)

**How many triangles are pictured here?**

○ 12

○ 16

○ 20

○ 22

○ None of these



Answer: 22

**Kaley designed a rectangular vegetable garden that measures 4 feet by 6 feet. Then she increased both the width and length by 20%. Find the percent of increase.**

○ 34%

○ 44%

○ 10.56%

○ 19%

○ None of these

Answer: 44%

**A complete cycle of a traffic light takes 60 seconds. During each cycle the light is green for 25 seconds, yellow for 5 seconds, and red for 30 seconds. At a randomly chosen time, what is the probability that the light will not be green?**

○ 1/4

○ 1/3

○ 5/12

○ 1/2

○ None of these

Answer: None of these

**If the diameter of a cylinder increases by 10%, how much does its volume increase?**

○ 21%

○ 31%

○ 42%

○ 11%

○ None of these

Answer: 21%

**Find the surface area of the structure made of 8 cubes glued together if the side length of each cube is 1 inch. Only consider the surfaces that are exposed.**

○ 30 sq. in

○ 32 sq. in

○ 42 sq. in

○ 48 sq. in

○ None of these

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Answer: 32 sq. in

**Erin started to read a novel and read 15 pages a day. After 6 days, 3/8ths of the book was left. How many pages are there in the book?**

○ 132

○ 144

○ 168

○ 214

○ None of these

Answer: 144

**A half-circle overlaps with a square. The diameter of the half-circle is 12 inches. Using 3.14 for pi, what is the area of the striped parts?**

○ 24 sq. in

○ 36 sq. in

○ 72 sq. in

○ 18 sq. in

○ None of these



12 inch

Answer: 36 sq. in

A ball is dropped from a height of 3 meters. On its first bounce it rises to a height of 2 meters. It keeps falling and bouncing to 2/3 of the height it reached on the previous bounce. On which bounce will it rise to a height less than 0.5 meters?

○ 4

○ 5

○ 6

○ 7

○ None of these

Answer: 5

The third exit on a highway is located at milepost 40 and the tenth exit is at milepost 160. There is a service center on the highway located three-fourths of the way from the third exit to the tenth exit. At what milepost would you expect to find this service center?

○ 90

○ 110

○ 120

○ 130

○ None of these

Answer: 130

An aquarium with a rectangular base that measures 100 cm by 40 cm and has a height of 50 cm. The aquarium is filled with water to a depth of 37 cm. A rock with volume 100 cubic cm is then placed in the aquarium and completely submerged. By how many centimeters does the water level rise?

○ 0.25 cm

○ 0.5 cm

○ 1 cm

○ 1.25 cm

○ None of these

Answer: 0.25 cm

**In the featured multiplication problem, A, B, C, and D are different digits. What is A + B ?**

○ 9

○ 3

○ 2

○ 1

○ None of these

$$\begin{array}{r} A\ B\ A \\ \times\ \ \ \ C\ D \\ \hline C\ D\ C\ ? \end{array}$$

Answer: 1

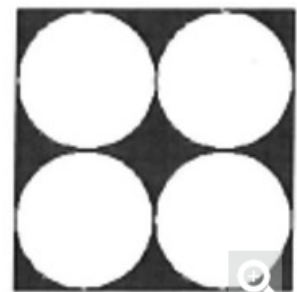**9 people go to a meeting. How many handshakes will occur if they all shake each other's hands?**

○ 27

○ 36

○ 52

○ 81

○ None of these

Answer: 36

**The diameter of each circle is 2 centimeters. Using 3.14 for pi, calculate the area of the shaded region.**

○ 3.44 sq. cm

○ 8 sq. cm

○ 16.2 sq. cm

○ 32.64 sq. cm

○ None of these

Answer: 3.44 sq. cm

**A bicycle that costs $120 is now on sale for 20% off. If the sales tax rate is 8%, what is the final cost of this bicycle including sales tax?**

○ $124.00

○ $96.00

○ $102.18

○ $103.68

○ None of these

Answer: $103.68

**Which three consecutive odd numbers have a product of 15,525?**

○ 27 x 29 x 31

○ 11 x 13 x 15

○ 17 x 19 x 21

○ 23 x 25 x 27

○ None of these

Answer: 23 x 25 x 27

**In the figure, what is the ratio of the area of the black squares to the area of the white squares?**

○ 3:5

○ 3:7

○ 3:8

○ 3:10

○ None of these



Answer:  3:5

**Four students took an exam. Three of their scores were 70, 80, and 90. If the average of their four scores is 70, then what is the remaining score?**

○ 40

○ 50

○ 55

○ 60

○ None of these

Answer: 40

**Which fraction is the smallest?**

○ 3/5

○ 30/54

○ 10/17

○ 60/121

○ None of these

$$\frac{3}{5} \quad \frac{10}{17} \quad \frac{15}{22} \quad \frac{30}{54} \quad \frac{60}{121}$$

Answer: 60/121

**Five trucks can transfer 150 tons of fruit a day. How many days does it take for 7 trucks to transfer 630 tons of fruit?**

○ 1 day

○ 2 days

○ 3 days

○ 4 days

○ None of these

Answer: 3 days

**(6 ? 3) + 4 - (2 - 1) = 5** To make this statement true, the question mark between the 6 and the 3 should be replaced by

○ /

○ x

○ +

○ -

○ None of these

Answer: / (represents division)