Question 1

Find the value of the expression below.

$$234 \times 7 + 7 \times 342 + 423 \times 7$$

A. 7000

B. 6939

C. 6993

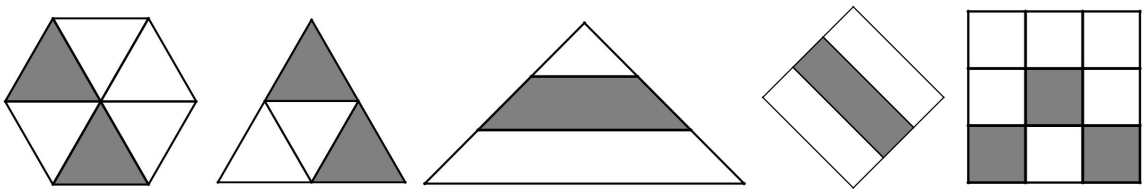
D. 6393

E. None of the above

Ans: C

Question 2

How many figures below are one-third shaded?



A. 1

B. 2

C. 3

D. 4

E. 5

Ans: C

Question 3 (Model)

Joel, Kathy and Lauren have 29 sweets altogether. Joel has 3 times as many sweets as Kathy. Lauren has 4 more sweets than Kathy. How many sweets does Lauren have?

A. 15

B. 9

C. 5

D. 10

E. None of the above

Ans: B

Question 4 (Four Operations)

The difference between two 3-digit numbers is 328. What is the greatest possible sum of these two numbers?

A. 1999
B. 2326
C. 328
D. 1000
E. None of the above

Ans: E

Question 5 (Number Logic)

There are 4 different pairs of whole numbers with a sum of 8:

1 + 7 = 8

2 + 6 = 8

3 + 5 = 8

4 + 4 = 8

How many different pairs of whole numbers with a sum of 500 are there?

A. 250
B. 249
C. 500
D. 1000
E. None of the above

Ans: A

Question 6 (Number Logic)

A stack has 9 different number cards. The numbers are from 1 to 9. Alex, Benjamin, Carol and Danish each draw 2 cards. It is given that

- the sum of the cards drawn by Alex equals to 10
- the difference of the cards drawn by Benjamin equals to 1
- the product of the cards drawn by Carol equals to 24
- the quotient of the cards drawn by Danish is equal to 3. Which number card is still left in the stack?

A. 3
B. 2

C. 5

D. 7

E. None of the above

Ans: D

Question 7

A shop sells 1 pen for $1, 5 pens for $4 and 10 pens for $7. Luke can buy up to 28 pens and Drake can buy up to 31 pens. If both Luke and Drake combine their money, what is the greatest number of pens they can buy?

A. 31 pens

B. 59 pens

C. 62 pens

D. 72 pens

E. None of the above

Ans: E

Question 8

A tree is planted every 12 metres along one side of a road. Including the trees at two ends of the road, there are 40 trees in total. 27 lamp posts are also installed along another side of the same road. The distance between any two neighbouring lamp posts is the same and there are lamp posts at the two ends of the road. What is the distance between two neighbouring lamp posts?

A. 18 metres

B. 20 metres

C. 17 metres

D. 16 metres

E. None of the above

Ans: A

Question 9

Josh lives on the 8^{th} floor. He needs to climb 24 steps to move from the 2^{nd} floor to the 5^{th} floor. How many steps does he need to climb to move from the 1^{st} floor to the 8^{th} floor?

A. 96

B. 64

C. 56

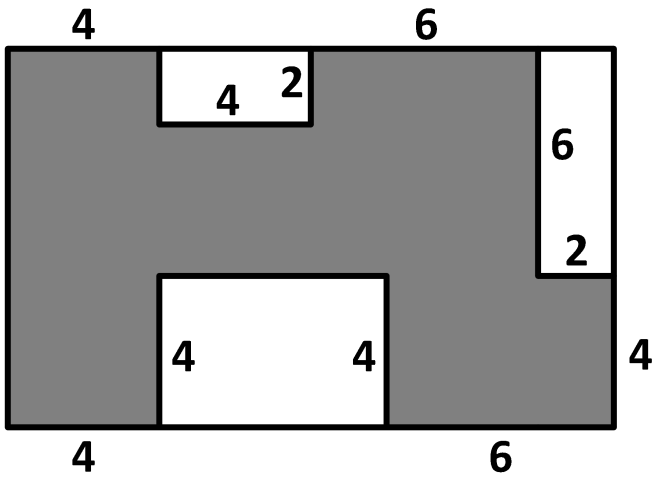
D. 48

E. None of the above

Ans: C

Question 10 (Area and Perimeter)

The diagram below is a rectilinear shape where all the corners are right angles. Given that the area of the shaded region is A and the perimeter of the shaded region is P, find $A + P$.



A. 168

B. 176

C. 180

D. 190

E. None of the above

Answer: C

Question 11 (Calendar Problem, Remainder)

In a certain year, there are more Sundays than Tuesdays, and there are more Saturdays than Thursdays. What day of the week is 7 January in that year?

A. Monday

B. Wednesday

C. Thursday

D. Friday

E. Sunday

Ans: D

Question 12 (Combinatorics)

How many different ways are there to get $10 using $1, $2 or $5 notes?

A. 3

B. 5

C. 8

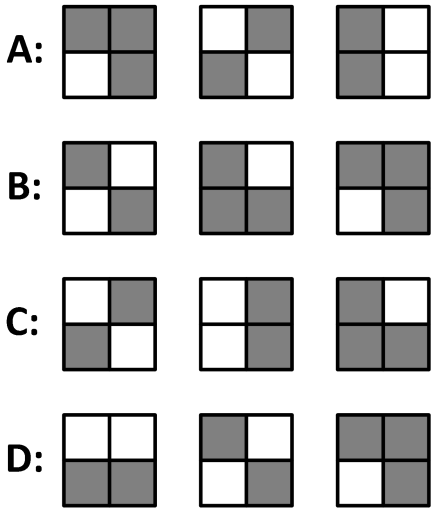
D. 10

E. None of the above

Ans: D

Question 13 (Number Logic)

In the diagram below, each 2×2 grid represents a digit and each row of 2×2 grids represents a 3-digit number. Given that the numbers are 913, 895, 628 and 238 (not in order), find the value of B.



A. 913

B. 895

C. 628

D. 238

E. None of the above

Ans: D

Question 14 (Divisibility)

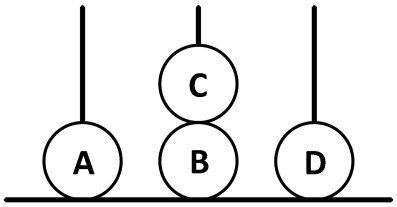
How many 2-digit numbers contain the digit '5' and are divisible by 5?

A. 9
B. 10
C. 13
D. 17
E. None of the above

Ans: B

Question 15 (Combinatorics)

The diagram below shows a toy with three standing rods and four beads (A, B, C and D). Betty takes one bead at a time until all beads are removed. How many different ways can Betty use to remove the beads?



A. 9
B. 10
C. 11
D. 12
E. None of the above

Ans: D

Question 16 (Last Digit)

What is the last digit of the product of all the even numbers from 2 to 50?

Ans: 0

Question 17 (Number Logic)

Carol wrote a 4-digit number on a paper and asked Dylan to guess it.

Dylan asked, “Is the number 9876?”

Carol replied, “One of the digits is correct and the position of that digit is also correct.”

Dylan asked again, “Is the number 5943?”

Carol replied, “Two digits are correct, but the positions of these two digits are wrong.”

Dylan asked again, “Is the number 2419?”

Carol said, “All four digits are correct, but the digits are all in the wrong places.”

What is the number written by Carol?

Ans: 9124

Question 18 (Multiplication)

The sum of several whole numbers is equal to 16. What is the greatest product of these whole numbers?

Ans: 324

Question 19 (Arithmetic)

Tony is playing a number game in which he will do the mathematical operation indicated on a card. There are 6 different cards, and the 6 operations are "- 2", "+ 2", "× 2", "÷ 2", "+ 3", "× 3". If Tony starts with number 10, what is the largest number he can obtain using each of the 6 operations on the cards exactly once?

Ans: 54

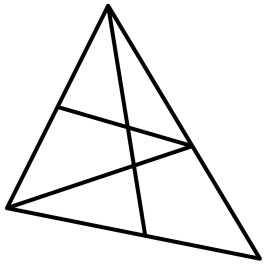
Question 20 (Max)

Paul has 20 blocks of different weights. All the weights are whole numbers. The lightest block is 1 kg and the heaviest block is 20 kg. Paul is trying to stack up the blocks vertically (i.e. one block on top of another). It is given that the sum of the weights of the blocks on top of each block cannot be greater than the weight of the block itself. What is the largest number of blocks Paul can stack?

Ans: 5

Question 21 (Counting) P4-5

How many triangles are there in the figure below?



Ans: 13

Question 22 (Cryptarithm)

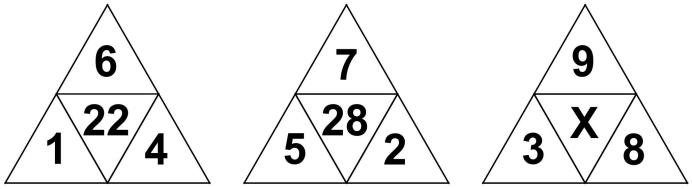
In the following, all the different letters stand for different digits. Find the value of the 3-digit number "SHE".

$$\begin{array}{cccc} & H & E \\ \times & H & E \\ \hline S & H & E \\ \hline \end{array}$$

Ans: 625

Question 23 (Pattern)

Observe the pattern in the diagram below. Find the value of "X".



Ans: 40

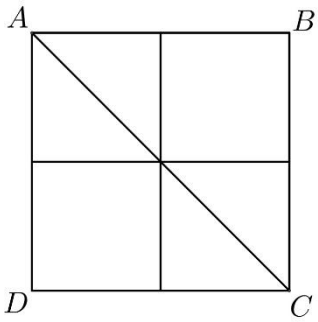
Question 24 (Working Backwards)

Gary adds two 2-digit numbers. In one of the numbers, he accidentally reads digit 7 as 1 in the ones place and the digit 4 as 9 in the tens place. He gets 144 as the result. If Gary reads the digits correctly, what is the correct sum?

Answer: 100

Question 25 (Geometry, Spatial Visualization)

The area of square ABCD below is 128 cm^2. What is the length of the diagonal line AC?



Ans: 16