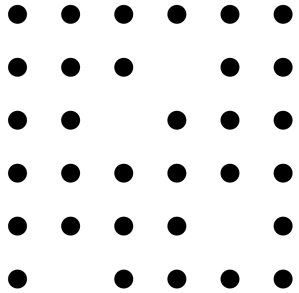
Question 1 (counting dots)

How many dots are there in the figure?



A. 31
B. 32
C. 33
D. 34
E. None of the above

Ans: B

Question 2 (Arithmetic)

What is 110 + 100 + 90 + 80 + 70 – 50 – 40 – 30 – 20 – 10 equal to?

A. 250
B. 300
C. 350
D. 370
E. 400

Ans: B

Question 3 (Time)

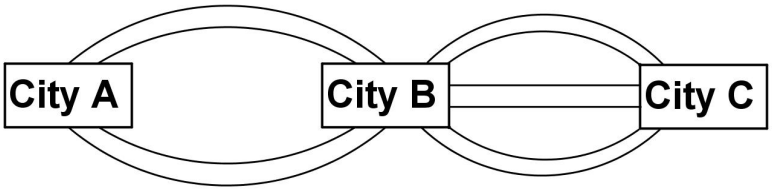
Alvin, Marcus and Paul are schoolmates. Every Monday, they go to the same learning centre from school at different times. Alvin leaves the school at 1 pm and reaches at 1:45 pm. Marcus leaves the school at 2:05 pm and reaches at 2:30 pm. Paul leaves the school at 2:55 pm and reaches at 3:25 pm. Who takes the shortest time to reach the learning centre among the three of them?

A. Alvin
B. Marcus
C. Paul
D. Paul and Alvin
E. None of them

Ans: B

Question 4 (Counting Routes)

The diagram below shows the map of 3 neighbouring cities. There are 2 roads connecting City A and City B, and 3 roads connecting City B and City C. Josh is in City A and wants to travel to City C. How many different routes can he take to travel from City A to City C?



A. 2
B. 4
C. 6
D. 8
E. None of the above

Ans: C

Question 5 (Pattern)

Observe the pattern below. How many stars are there before the 21st shape?

☆ ♥ ☆ ☆ ☆ ♥ ☆ ☆ ☆ ♥ ☆ ☆ ☆ ♥ ☆ ☆ .....

A. 20
B. 17
C. 16
D. 15
E. 12

Ans: D

Question 6 (Proportional Thinking)

Water from a kettle can fill up 3 water bottles. Water from each water bottle can fill up 4 cups. How many cups of water are needed to fill up the kettle?

A. 12 cups
B. 9 cups
C. 8 cups
D. 7 cups
E. None of the above

Ans: A

Question 7 (Pattern)

What is the next number in the sequence below?

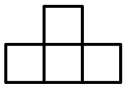
$$20, 10, 16, 7, 12, 4, 8, \ldots$$

A. 1
B. 5
C. 7
D. 12
E. None of above

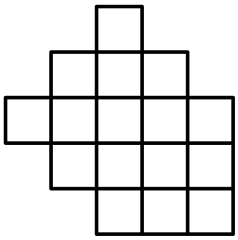
Ans: A

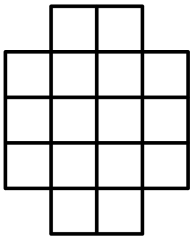
Question 8 (Spatial Visualization)

Terence has the following piece made up of 4 square tiles:

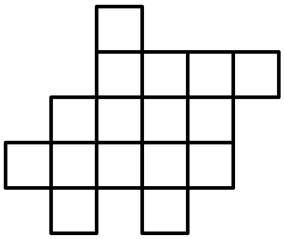


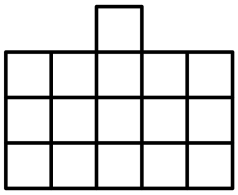
Which of the figures below can Terence make using the pieces he has?

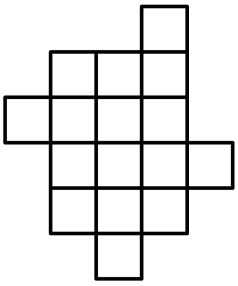
A. 



B
C



D. 



E.

Ans: D

Question 9 (Intervals)

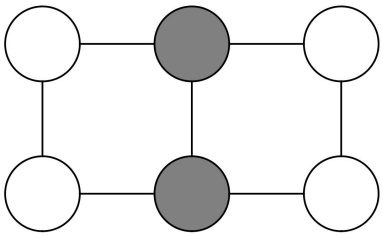
Josh lives on the 6th floor. He needs to climb 24 steps to move from the 2nd floor to the 4th floor. How many steps does he need to climb from the 1st floor to the 6th floor?

A. 72
B. 60
C. 48
D. 24
E. None of the above

Ans: B

Question 10 (Number Logic)

Each of the numbers 1, 2, 3, 4, 5 and 6 is to be placed in each circle in the diagram. The sum of the numbers in each square is 12. What is the sum of the numbers in the shaded regions?



A. 3
B. 4
C. 5
D. 7
E. 11

Ans: A

Question 11 (Multiples)

Vicky shades the multiples of a number in the table below. At the end, she shades exactly 11 numbers. What is Vicky's number?

1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

A. 11
B. 9
C. 7
D. 5
E. None of the above

Ans: B

Question 12 (Diagram with patterns)

The pictures below are made up of squares and 6-sided shapes, each of which is added one shape at a time. Figure 1 has 17 lines, figure 2 has 20 lines and figure 3 has 25 lines. How many lines will there be in figure 8?

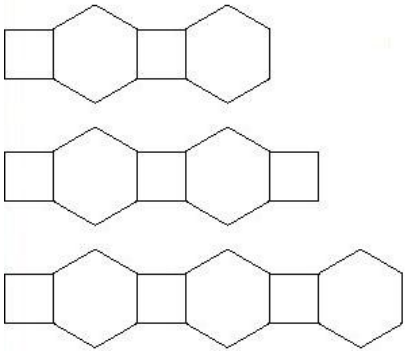


Figure 1

Figure 2

Figure 3

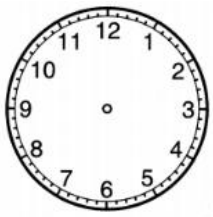
A. 80
B. 45
C. 43
D. 41
E. None of the above

Ans: E

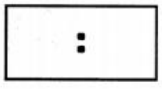
Question 13 (Clock)

Carl has two clocks on his night stand: an analog clock (left side) and a digital clock (right side). When the power goes out, both clocks stop running. When the power comes back on, his digital clock (right side) resets to 12:00 am. His analog clock (left side) continues running from the previous time.

One night, the power shuts down at 3:00 am and stays out for 30 minutes. What time will be displayed on each of Carl's clocks at exactly 8:00 am?



Analog clock



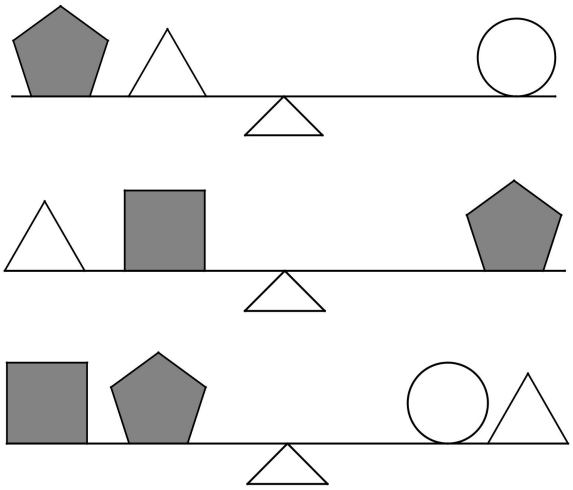
Digital clock

A. 7:30 am (analog), 4:30 am (digital)
B. 7:30 am (analog), 5:00 am (digital)
C. 8:00 am (analog), 5:00 am (digital)
D. 8:30 am (analog), 5:00 am (digital)
E. 8:30 am (analog), 5:30 am (digital)

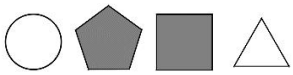
Ans: A

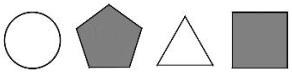
Question 14 (Measurement, Weight) P2-3 (Add SASMO explanation)

Some shapes are placed on both sides of the balance scale. If the two sides weigh the same, the balance scale will be balanced.



Which of the following is ordered from the heaviest to the lightest?

A. 

B. 

C. 

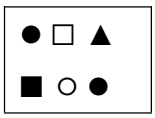
D. 

E. None of the above

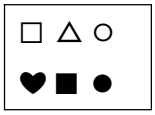
Ans: A

Question 15 (Number Pattern) P2

Each shape represents a unique digit. Each 3-digit on the left represents a unique group of shapes on the right.



602
164
751
521



Which of the following represents ■ ○ ●?

A. 602
B. 164
C. 751
D. 521
E. None of the above

Ans: D

Question 16 (Age)

Mr. Lee is now 63 years old. He has 3 grandchildren and their ages are 9, 13 and 17. In how many years' time will Mr. Lee's age be equal to the sum of his grandchildren's ages?

Answer: 12 years

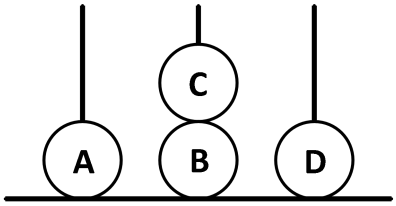
Question 17 (Multiples)

Sally bought some sweets from a grocery shop. The number of sweets she bought is a multiple of 7. If she had bought 1 more sweet, the number of sweets she bought would be a multiple of 9. If Sally bought less than 50 sweets, how many sweets did Sally buy?

Answer: 35 sweets

Question 18 (Combinatorics)

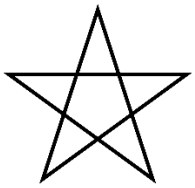
The diagram below shows a toy with three standing rods and four beads (A, B, C and D). Betty takes one bead at a time until all the beads are taken. In how many different ways can Betty take all the beads?



Answer: 12 ways

Question 19 (Counting)

How many triangles are there in the figure below?



Answer: 10 triangles

Question 20 (Working Backwards)

Gary adds two 2-digit numbers. In one of the numbers, he accidentally reads digit 2 as 5 in the ones place and the digit 6 as 9 in the tens place. He gets 111 as the result. If Gary reads the digits correctly, what is the correct sum?

Answer: 78

Question 21 (Chicken and Rabbit)

A grocery shop sells candy in two types of packaging. The big packet has 12 pieces of candy and the small packet has 8 pieces of candy. Jonathan bought 100 pieces of candy and he got less than 10 packets. How many big packets did he purchase?

Answer: 7 big packets

Question 22 (Number Logic)

John wrote a 4-digit number on a piece of paper and asked Peter to guess it.
Peter asked: ‘‘Is the number 7924?’’
John replied: ‘‘One of the digits is correct and the position of that digit is also correct.’’
Peter asked again: ‘‘Is the number 1763?’’
John replied: ‘‘Two digits are correct, but the positions of those digits are both wrong.’’
Peter asked again: ‘‘Is the number 8657?’’
John said: ‘‘All four digits are correct, but the digits are all in the wrong places.’’

What is the number written by John?

Answer: 7586

Question 23

An unknown number is an even number greater than 270 but less than 300. The sum of its digits is six times the hundreds digit. Find the unknown number.

Answer: 282

Question 24

In the following, all the different shapes stand for different numbers.

☆ + ♥ = 8
♥ + ♥ + ☆ = 13
○ - ▲ = 11
▲ - ☆ = 5

What is the value of ○ + ☆ ?

Answer: 22

Question 25 (Cryptarithm)

In the following, all the different shapes stand for different digits. Find the sum of ☆ and ♡.

Answer: 16