1. Assuming that the pattern continues, what are the next 3 terms?
   39, 34, 29, ___, ___, ___

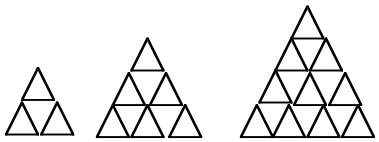
   A 14, 19, 24

   B 24, 19, 14

   C 28, 24, 20

   D 29, 24, 19

2. Assuming that the pattern continues, how many small triangles are in the fourth design?



   A 10

   B 15

   C 25

   D 30

3. There are 8 people at a business meeting. Everyone shakes hands with everyone else once. How many hand shakes would there be?

   A 28

   B 24

   C 21

   D 8

4. Assuming that the pattern continues, what are the next 3 terms?
   15, 18, 21, 24, ___, ___, ___

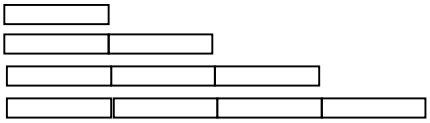
   A 33, 30, 27

   B 31, 30, 27

   C 27, 30, 33

   D 27, 31, 34

5. Use the pattern of designs below. What is the total number of rectangles at each step in the pattern?



   A 1, 2, 3, 4

   B 1, 2, 4, 8

   C 1, 3, 5, 7

   D 1, 3, 6, 10

6. Which of the following rules describes the number pattern? 5, 10, 20, 40

   A Start with 5 and multiply by 2 repeatedly

   B Start with 5 and add 10 repeatedly

   C Start with 5 and add 2 repeatedly

   D Start with 5 and multiply by 5 repeatedly

7. A pattern is created by starting with 2 and adding 3.5 repeatedly. Which is the first 5 terms of this pattern?

   A 2, 3.5, 5.5, 9, 12.5

   B 2, 5.5, 9, 12.5, 16

   C 3.5, 7, 10.5, 14, 17.5

   D 5.5, 9, 12.5, 16, 18

8. Which of the following rules describes the number pattern?
   0.57, 0.48, 0.39, 0.30, ___, ___, ___

   A subtract 0.9 from each term

   B add 0.9 from each term

   C subtract 0.7 from each term

   D add 0.7 from each term

(appendix continues)

9. Bamboo, which is a grass, grows as much as 3 ft high per day.

Number of days	1	4	8	12	16
Height of plants	3	12	24	?	?

What will be the height of the bamboo at 16 days?

A 36

B 42

C 48

D 56

10. Five bacteria are placed in a petri dish then counted each hour. The first bacteria counts were: 12, 26, 54, 110. As this pattern continues, how many hours later will there be 446 bacteria?

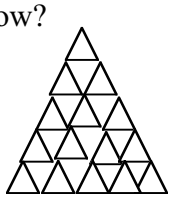
A 6 hours

B 7 hours

C 8 hours

D 10 hours

11. Assuming that the design continues, how many triangles are there on the 6th row?



A 5

B 6

C 11

D 13

12. Using the table below, what is the total number of squares for a 5 x 5 grid?

Number of Different Size Squares

Size of Grid	1x1	2x2	3x3	4x4	Total
1 x 1	1	0	0	0	1
2 x 2	4	1	0	0	5
3 x 3	9	4	1	0	14
4 x 4	16	9	4	1	30

A 25

B 30

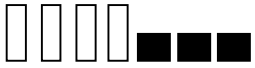
C 50

D 55

13. If ▭ represents x and ■ represents 1 unit, which example below models the variable expression 5x + 3?

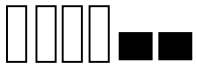
A 

B 

C 

D 

14. Which of the following variable expressions represents the model below?



A 2x + 4

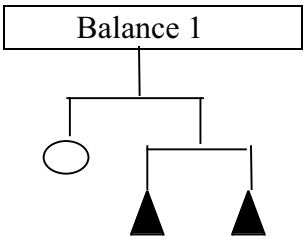
B 2x + 3

C 4x + 2

D 4x + 3

(appendix continues)

15. The total weight of the balance is 16. What is the value of each shape in the figure below?



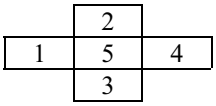
A ◯ = 8 ▲ = 8

B ◯ = 8 ▲ = 4

C ◯ = 4 ▲ = 8

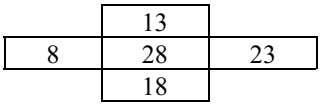
D ◯ = 4 ▲ = 4

16. Multiply each entry in the figure below by 3 and then add 5

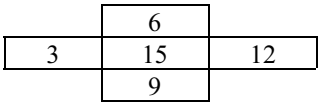


Which is the resulting figure?

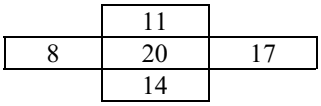
A



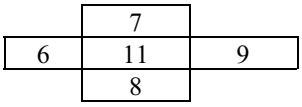
B



C



D



17. Which numerical expression below has a value closest to 60?

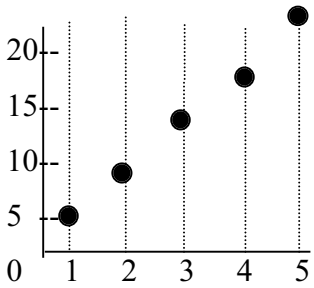
A $38 + 4 \bullet 5$

B $3 \bullet 4 + 6 \bullet 2$

C $4 + 11 \bullet 4$

D $5^2 + 4 \bullet 2$

18. Use the graph below.
Which best describes the function?



A output = 4 ● input + 1

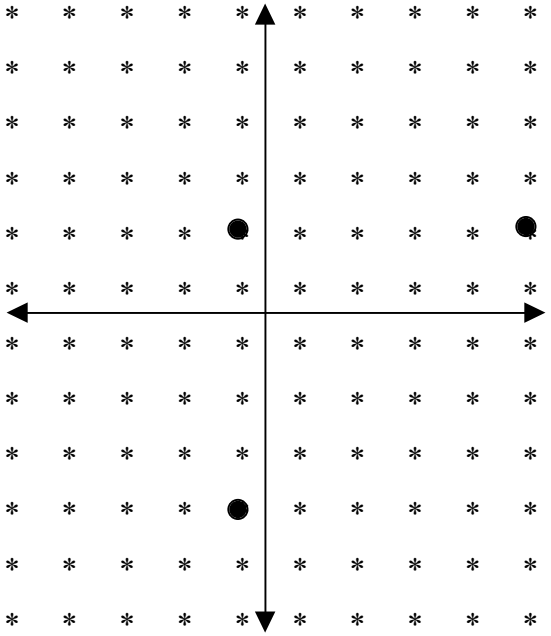
B output = 3 ● input + 2

C output = 2 ● input – 3

D output = 1 ● input + 4

(appendix continues)

19. Three vertices of a rectangle have coordinates (-1,2), (5,2), and (-1,4). Which is the coordinate of the fourth vertex?



A (5, -4)

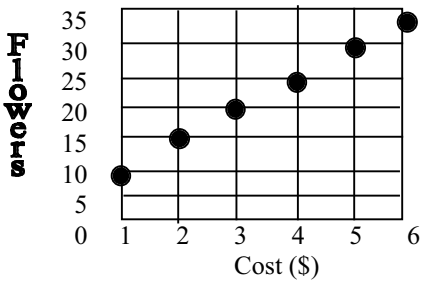
B (-4, 5)

C (5, 4)

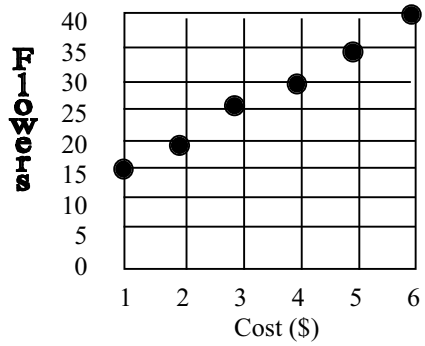
D (4, -5)

20. The drama club sells carnations for its Annual holiday fund-raiser. Help the drama club decide which company to use. Which graph below represents the company that would be the most economical for the club to hire?

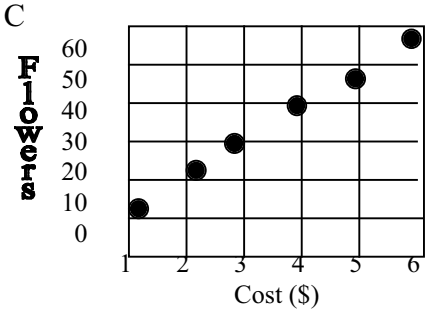
A



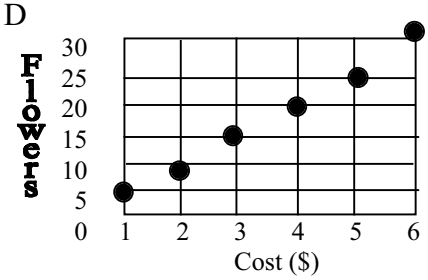
B



C



D



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