



Patterns and Early Algebra

1 Which rule would create this pattern?

3, 9, 27

- A Start at 22 and subtract 1 for each term
- B Start at 3 and multiply by 3 for each term

2 Choose the rule that describes this geometric pattern

2, 6, 18, 54, 162, 486

- A Start at 2 and multiply by -1 for each term
- B Start at 2 and multiply by 7 for each term
- C Start with 2 and 5. Add the prior two terms for each subsequent term
- D Start at 2 and multiply by 0 for each term
- E Start at 2 and multiply by 1 for each term
- F Start at 2 and multiply by 3 for each term

3 What rule turns each input into its output?

Input	Output
18	2
36	4
54	6
72	8
81	9

- A add 3
- B multiply by 9
- C subtract 2
- D divide by 9

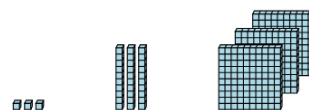
4 Choose the rule that describes this increasing pattern

1, 4, 7, 10

- A Start with 1 and 4. Add the prior two terms for each subsequent term
- B Start at 1 and multiply by 3 for each term
- C Start at 2 and add 3 for each term
- D Start at 1 and add 2 for each term
- E Start at 1 and add 3 for each term
- F Start at -1 and add 3 for each term

5 What is the rule for this pattern?

3 30 300



- A Start at 3 and multiply by 10 for each term
- B Start at 1 and multiply by 2 for each term



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6 What rule turns each input into its output?

Input	Output
12	7
13	8
14	9
15	10
16	11

A

subtract 10

B

subtract 5

C

add 11

D

subtract 4

7 Figure out the answer by using the correct order of operations

$$(34 - 6) \div 4 - 15 \div 3 = ?$$

A

1

B

2

C

0

D

6

E

9

F

8

8 Figure out the answer by using the correct order of operations

$$(9 + 1) \div 2 + 7 = ?$$

A

20

B

11

C

1

D

15

E

12

F

6

9 Figure out the answer by using the correct order of operations

$$63 \div (3 + 4) = ?$$

A

15

B

8

C

9

D

24

E

5

F

4

10 Find the term that would complete this increasing pattern in the missing space

1, ?, 13, 19

A

13

B

3

C

7

D

8

E

10

F

12



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11 What are the next 3 numbers in the pattern, skip counting upwards by 5

5, 10, 15, __, __, __

A 21, 27, 33 B 21, 25, 29

C 19, 24, 29 D 20, 25, 30

E 21, 26, 31 F 20, 24, 28

12 Find the term that would be next in this increasing pattern
2, 4, 6, ?



A 11 B 14 C 3
D 6 E 8 F 2

13 Find the term that would be next in this increasing pattern

2, 7, 12, ?

A 17 B 22 C 21

D 19 E 18 F 20

14 Find the term for $n=7$ in this increasing pattern (first term is $n=1$)

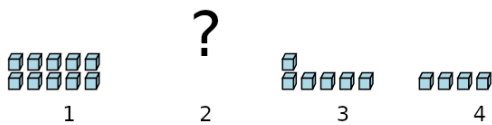
1, 6, 11, 16

A 25 B 31

C 15,625 D 55

E 27 F 26

15 Find the term that would complete this decreasing pattern in the missing space
10, ?, 6, 4



A 8 B 10 C 3
D 5 E 11 F 0

16 Choose the first values that this pattern rule would create

Start at 3 and add 6 for each term

A 3, -3, -9, -15, -21 B 3, 11, 19, 27, 35

C 3, 18, 108, 648, 3,888 D 4, 10, 16, 22, 28

E 3, 9, 15, 21, 27 F 1, 7, 13, 19, 25

17 Skip count upwards by 4

4, 8, 12, 16, __, __

A 20, 25 B 21, 24

C 20, 24 D 20, 23

E 21, 25 F 19, 23

18 Skip count upwards by 2

2, 4, __, __, __, 12, 14

A 7, 9, 11 B 7, 10, 13

C 6, 9, 12 D 6, 8, 10

E 7, 8, 9 F 5, 7, 9



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19 Skip count upwards by 4

4, 8, __, __, 20, 24

A	12, 17	B	12, 16
C	13, 18	D	13, 17
E	11, 15	F	13, 16

20 What is the next number in the pattern, skip counting downwards by 3

18, 15, 12, __

A	9	B	10
C	8		

21 What rule turns each input into its output?

Input	Output
7	?
9	10
11	12
13	14
14	15

A	add 1
B	subtract 11
C	add 4
D	add 3

22 Find the term that would be next in this place value pattern

11 11,000 11,000,000 ? 3, 6, 9, __, __, __

A	11,000,000,000	B	10,000,000,000
C	110,000,000	D	11,000,000,000,000
E	11,000,000	F	1,100,000,000,000

23 What are the next 3 numbers in the pattern, skip counting upwards by 3

? 3, 6, 9, __, __, __

A	13, 17, 21	B	11, 14, 17
C	12, 15, 18	D	13, 15, 17
E	12, 14, 16	F	12, 16, 20



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24 What rule turns each input into its output?

Input	Output
1	13
2	18
6	38
8	48
9	53

A

multiply by 6 then add 6

B

multiply by 5 then add 8

C

multiply by 3 then add 6

D

multiply by 2 then add 11

25 What rule turns each input into its output?

Input	Output
2	3
4	11
7	?
8	27
9	31

A

multiply by 4 then subtract 8

B

multiply by 3 then subtract 12

C

multiply by 4 then subtract 5

D

multiply by 6 then subtract 7



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26 What rule turns each input into its output?

Input	Output
1	0
5	4
6	?
8	7
15	14

A

subtract 8

B

add 1

C

add 6

D

subtract 1

27 What rule turns each input into its output?

Input	Output
2	14
4	28
7	49
8	56
9	?

A

divide by 5

B

divide by 2

C

divide by 12

D

multiply by 7



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28 What rule turns each input into its output?

Input	Output
2	1
4	2
6	3
8	4
10	5

A

multiply by 9

B

multiply by 10

C

divide by 2

D

multiply by 3

29 Solve this problem:

How many apples were eaten if a koala eats 42 grams of apples and each apple weighs 7 grams?

A

5

B

-42

C

1

D

-7

E

0

F

6

30 Solve this problem:

A koala eats 28 grams of apples. Each apple weighs 4 grams. How many apples were eaten?

A

8

B

6

C

70

D

7

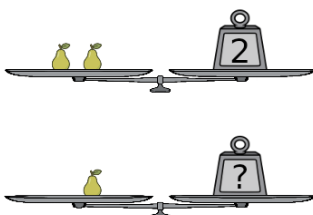
E

60

F

-4

31 Which equations represent what these scales are showing



32 Solve for the variable in the equation
 $m + 9 = 15$

A

 $m = 6$

B

 $m = 5$

C

 $m = 4$

D

 $m = 7$

E

 $m = 9$

F

 $m = 8$



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33 Solve the one-step equation for x .

$$x - 10 = 3$$

A $x = 14$

B $x = 15$

C $x = 12$

D $x = 13$

34 Solve the one-step equation for x .

$$x + 4 = 14$$

A $x = 11$

B $x = 12$

C $x = 9$

D $x = 10$

35 Solve for the variable in the equation

$$b - 9 = -3$$

A $b = 8$

B $b = 6$

C $b = 9$

D $b = 5$

E $b = 3$

F $b = 7$

36 Solve the one-step equation for x .

$$\frac{x}{6} = 8$$

A $x = 48$

B $x = 49$

C $x = 47$

D $x = 50$

37 Which equations represent what these scales are showing

