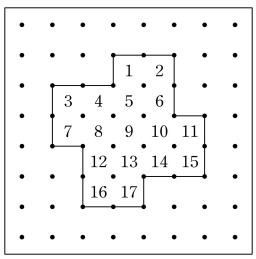
2021 Eye Level MATH Olympiad [Grade1]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	③	11	②	21	⑤	31	15	41	5
2	③	12	②	22	④	32	19	42	②
3	②	13	④	23	③	33	7	43	5
4	③	14	③	24	②	34	9	44	34
5	④	15	⑤	25	①	35	8	45	17
6	④	16	①	26	②	36	2	46	3
7	②	17	④	27	③	37	17	47	③
8	②	18	⑤	28	⑤	38	9	48	④
9	④	19	②	29	④	39	41	49	2
10	③	20	⑤	30	③	40	27	50	④

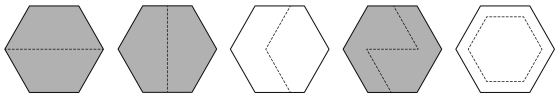
【Sol】

44. The answer is 34.

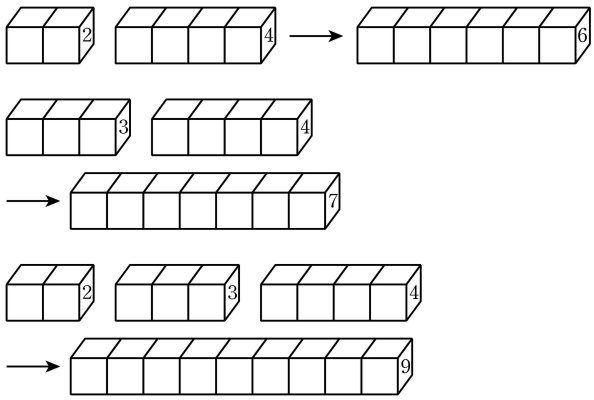
45. 17 squares



46. The 1st, 2nd, 4th figures.

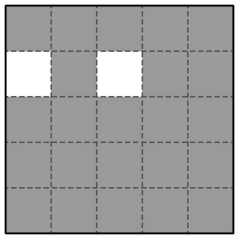


47. All possible lengths that can be made with the given blocks are as follows:



So length of 8 in option ③ is not a possible length that can be created using the blocks given.

49. The answer is 2.



2021 Eye Level MATH Olympiad [Grade2]

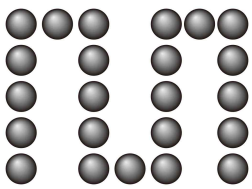
No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	②	11	②	21	②	31	14	41	64
2	⑤	12	⑤	22	③	32	41	42	①
3	③	13	④	23	④	33	137	43	23
4	④	14	④	24	③	34	125	44	4
5	③	15	④	25	②	35	610	45	①
6	③	16	②	26	③	36	18	46	①
7	③	17	②	27	④	37	184	47	11
8	④	18	②	28	⑤	38	228	48	②
9	②	19	①	29	④	39	705	49	89
10	③	20	④	30	⑤	40	361	50	25

【Sol】

41. A=14+9=23, B=32+9=41. A+B=64.

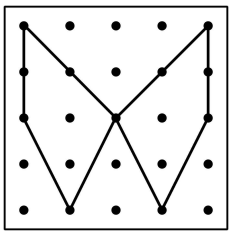
32	41	14	23	32	41

43. The balls increase by 6. So the fourth figure has 23 balls.



44. Each number is the last digit of the sum of the previous two numbers. So, the answer is 3+1=4.

47. 11 dots.



48. The numbers of sides of the polygons increases from 3. The circles iterate between being outside and inside the polygons.

49. The reflected addition is 8+81.

50. Even if the month has 28, 30, or 31 days, the last Tuesday is always the 25th.

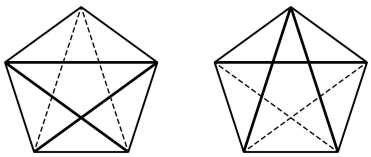
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

2021 Eye Level MATH Olympiad [Grade3]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	15	11	26	21	30	31	14	41	5
2	16	12	24	22	61	32	75	42	④
3	9	13	18	23	43	33	736	43	②
4	9	14	14	24	18	34	95	44	4
5	30	15	28	25	20	35	512	45	1
6	31	16	18	26	77	36	486	46	20
7	10	17	29	27	5	37	12	47	21
8	12	18	237	28	5	38	11	48	90
9	15	19	125	29	19	39	41	49	5
10	17	20	642	30	74	40	8	50	②

【Sol】

41. Two types of cutting are possible but both types create only 5 triangles.



43. The number of squares of the example is 17

①: 18 ②: 17 ③: 16 ④: 13

44. The numbers 0, 1, 2, 3, 4, ... are placed as follows:

1 − 2 5 −
| | |
0 3 − 4

45. The relationship between A, B, and C is 2B-A=C.

So the missing number is 1.

47. The number of intervals between cones are $40 \div 2 = 20$.

The cones are placed at the both ends of each interval. So the number of cones is 20+1=21.

48. The hundreds digit and ones digit are the same. So such numbers are determined by the hundreds digit and tens digit. We can make $9 \times 10 = 90$ numbers.

49. The last day is Friday. So the first day of the next year is Saturday.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

2021 Eye Level MATH Olympiad [Grade4]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	25	11	26	21	16	31	336	41	②
2	16	12	31	22	28	32	4	42	699
3	26	13	26	23	75	33	15	43	④
4	17	14	44	24	2	34	48	44	50
5	17	15	55	25	7	35	417	45	605
6	25	16	130	26	2	36	6	46	48
7	58	17	179	27	821	37	72	47	8
8	118	18	126	28	587	38	38	48	4
9	144	19	661	29	8	39	14	49	128
10	711	20	36	30	11	40	205	50	12

【Sol】

41. The number of squares of the problem is 11

①: 10 ②: 11 ③: 12 ④: 13

42. $98+601=699$

98+601

44. $2+9+16+23=50$

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

45. Symmetric numbers are 11, 22, 33, ..., 99.

$11\times11=121$ is symmetric.

$11\times22=242$ is symmetric.

$11\times33=363$ is symmetric.

$11\times44=484$ is symmetric.

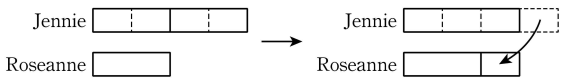
$11\times55=605$ is not symmetric.

$22\times22=484$ is symmetric.

$22\times33=726$ is not symmetric.

So 605 is the smallest number.

46. After Jennie gave her hairpins to Roseanne, they had the same number of hairpins.



So, they had $24+24=48$ hairpins altogether.

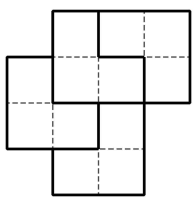
47. $2\times4-1=7$

$3\times3-2=7$

$2\times5-3=7$

So, A is $3\times4-4=8$.

48. You can cover completely with 4 figures.



49. $32\times4=128$, $43\times2=86$, $42\times3=126$

The greatest product is 128.

50. The number 5 appears 12 times on these three tables.

3	3	3
4	4	4
4	5	5

4	4	4
4	5	5
5	5	5

5	5	5
5	5	6
6	6	6

2021 Eye Level MATH Olympiad [Grade5]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	12	11	19	21	17	31	37	41	④
2	14	12	28	22	8	32	28	42	20
3	19	13	6	23	1	33	51	43	8
4	37	14	846	24	9	34	24	44	17
5	63	15	277	25	7	35	16	45	27
6	101	16	679	26	3	36	152	46	④
7	35	17	66	27	6	37	3	47	72
8	43	18	66	28	88	38	9	48	24
9	4	19	92	29	44	39	6	49	56
10	38	20	13	30	24	40	19	50	71

【Sol】

42. 1×1 squares: 13
2×2 squares: 6
3×3 squares: 1

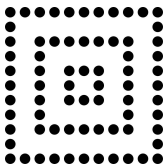
43. Reverse thinking.
1st floor ←(down 9, up 6, down 12)
– 16th floor ←(up 10, down 5, up 3)
– 8th floor

44. ○−☆=7, ○×☆=60
○=12, ☆=5

45. ○→□: multiply by 5 and decrease by 1
□→⬠: divide by 2
So, A=5 and B=22.
The answer is 5+22=27.

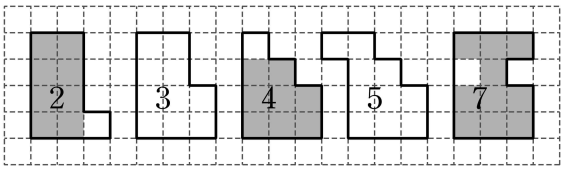
46. In the second lap, two girls were running ahead of Amy. Statement (3) says that one of the two girls was Bonnie. Statement (4) says Clara was not running ahead of Amy. So the winner is Dorothy, whose name was not mentioned in the statements.

47. 72 dots



48. The ones digit should be 2 or 4. So you can make $4\times3\times2=24$ even numbers.

49. No.2, No.4, and No.7 can become symmetrical.



50. The inner $3\times3\times3=27$ blocks are not painted. So the painted blocks are $125-27=98$. The difference is $98-27=71$.

2021 Eye Level MATH Olympiad [Grade6]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	8	11	168	21	43	31	63	41	6
2	5	12	864	22	3	32	63	42	225
3	46	13	420	23	20	33	28	43	50
4	41	14	4	24	5	34	254	44	112
5	56	15	12	25	9	35	145	45	21
6	11	16	11	26	312	36	20	46	54
7	85	17	5	27	4	37	75	47	6
8	6	18	6	28	7	38	25	48	4
9	13	19	7	29	99	39	540	49	26
10	8	20	11	30	43	40	155	50	280

【Sol】

41. Combining Balance 1 and Balance 2, we obtain

△△△□□□=9○ or △□=3○.

Then, for Balance 2

△□□=5○

3○+□=5○

□=2○

and therefore

□□□=6○.

42. Ones digit should be 0, 2, 4, 6, or 8.

If the hundreds digit is odd, then there are $5\times5\times5=125$ even numbers. If the tens digit is odd, then there are also $4\times5\times5=100$ even numbers. So there are $125+100=225$ even numbers in total.

43. $8\times6+4\div2=50$

44. The rule shows that even numbers are divided by 2 and odd numbers are multiplied by 3 and increased by 1.

So, ○=16 and □=7.

The answer is $16\times7=112$.

45. Possible scores are

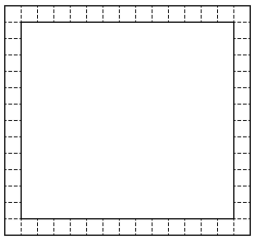
$12+12+7=31$, $12+7+2=21$,

$7+7+7=21$, $7+2+2=11$.

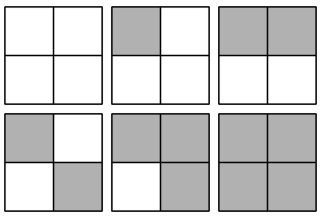
So, Alice got 31 points and Charlie got 11 points. Bob's score is 21, but we cannot know which one of two cases happened.

46. $1+2+\cdots+20=210=15\times14$

So the number of squares on the boundary is 54.



47.

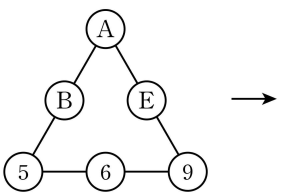


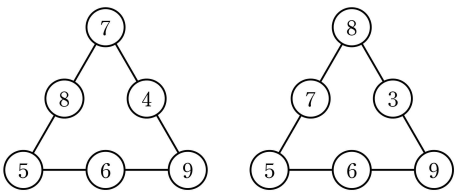
48. $24\div8$, $28\div4$, $48\div2$, $84\div2$

49. The shape was made using 19 blocks.

$500\div19=26R6$. So you can make 26 copies.

50.





$5\times8\times7=280$ $5\times6\times9=270$

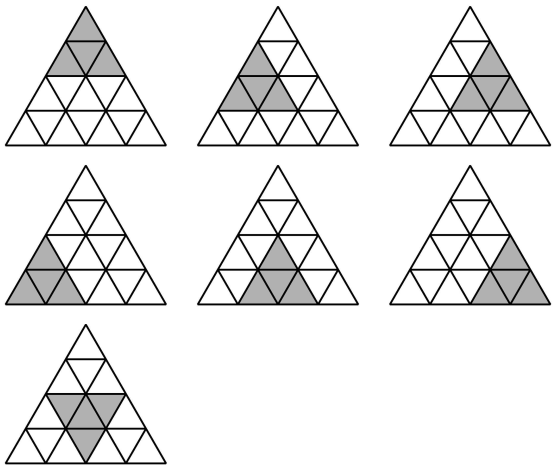
$7\times4\times9=252$ $8\times3\times9=216$

2021 Eye Level MATH Olympiad [Grade7]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	10	11	13	21	14	31	10	41	7
2	17	12	4	22	64	32	46	42	293
3	1	13	1	23	649	33	23	43	15
4	13	14	4	24	365	34	422	44	13
5	8	15	48	25	18	35	7	45	105
6	4	16	7	26	10	36	26	46	200
7	49	17	9	27	215	37	285	47	17
8	1	18	5	28	12	38	360	48	114
9	1	19	13	29	314	39	240	49	708
10	3	20	48	30	8	40	785	50	20

【Sol】

41. 7 cases in total.



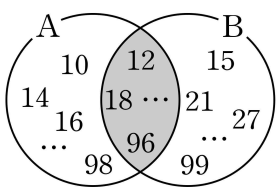
42. 1st row: $5\times2=10$. Attach 10 and 2 to be 102.

2nd row: $9\times4=36$. Attach 36 and 4 to be 364.

So, A=287 from $4\times7=28$. B=6 since $6\times3=18$.

A+B=287+6=293.

43.



The numbers that go in the shaded area are 2-digit and multiples of 6. So, they are

$6\times2,\ 6\times3,\ \ldots,\ 6\times16$.

There are 15 numbers.

44. The faces containing 6 dots and 5 dots are opposite.

So, the two faces cannot be seen and the number of dots on three faces cannot be greater than 6+4+3=13. Since the three faces of 6 dots, 3 dots, and 4 dots are adjacent, the answer is 6+4+3=13.

45. By (2) their three numbers are all odd: 1, 3, 5, 7, 9.

By (1) their numbers cannot be 9.

By (3) their number are 3, 5, 7.

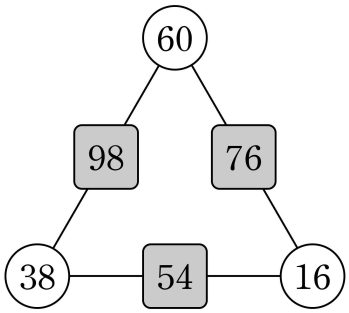
So, the answer is $3\times5\times7=105$.

46. The number of 3-digit numbers of the form 1xx is $4\times4=16$. So, 200 is the 17th number.

47. The number of dots is one more than the number of segments. At each step, segments are doubled. That is, the numbers of segments are 2, 4, 8, 16.

The number of dots is 16+1=17.

48.

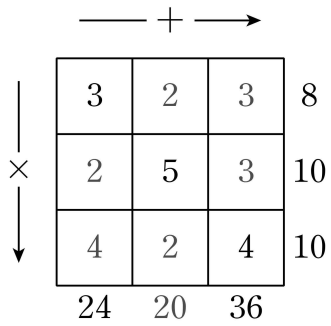


60+38+16=114

49. C×C is 2-digits and ends with 4. So, C=8. Then, □8−64=4 determines 68−64=4. From the first subtraction AB−64=6, ABC=708.

$$\begin{array}{r} 88 \\ 8\overline{)708} \\ 64 \\ \hline 68 \\ 64 \\ \hline 4 \end{array}$$

50. Note the third column. Since the product is 36, the blank squares can be 1,9; 3,3; or 9,1. But, since the row sums are 8 and 10, the column must be 3, 3, 4. So, A=2×5×2=20.



2021 Eye Level MATH Olympiad [Grade8]

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	5	11	92	21	127	31	18	41	475
2	13	12	77	22	24	32	67	42	480
3	9	13	45	23	2	33	6	43	29
4	23	14	632	24	7	34	9	44	17
5	27	15	722	25	8	35	43	45	7
6	1	16	802	26	45	36	178	46	④
7	1	17	65	27	25	37	20	47	13
8	5	18	124	28	19	38	18	48	361
9	52	19	21	29	10	39	21	49	75
10	36	20	115	30	308	40	5	50	9

【Sol】

41. $91+93+95+97+99$
$=95\times5=475$

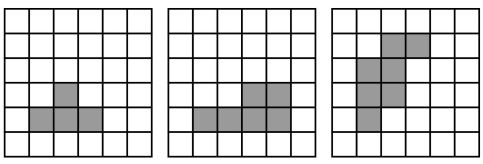
42. The perimeter of the figure is calculated as follows:
$6+4+2+2+2=16(\text{cm})$
So the actual perimeter is $16\times30=480(\text{m})$.

43.

Jan	Feb	Mar	Apr	May	Jun
3	7	7	4	2	6

3+7+7+4+2+6=29

44.



Front Side Top

4+6+7=17

45. Note that 1 bicycle and 11 tricycles have 1×2+11×3=35 wheels. Also, 11 bicycles and 1 tricycles have 11×2+1×3=25 wheels. So, as the number of tricycles increases, the total number of wheels increases. Since 6 bicyles and 6 tricycles have 6×2+6×3=30 wheels and this is greater than 29, we should reduce the number of tricycles. The next candidate of 7 bicycles and 5 tricycles satisfies the condition.

Or: If the number of tricycles is T and the number of bicycles is B, the number of wheels in total is (B+T)x2+T.
Since there are 12 vehicles, B+T=12, and so (12)x2+T=29. Then T=5 and so B=7.

bicycles	1	...	6	7	...	11
tricycles	11	...	6	5	...	1
wheels	35	...	30	29	...	25

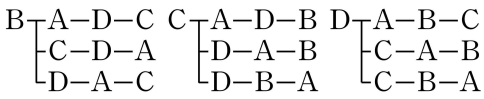
47. Since $a.b\times b.a$ is a natural number, $a=5$ and b is even, or a is even and $b=5$. So, the candidates are 2.5, 4.5, 6.5, and 8.5. We can easily verify that $2.5\times5.2=13$.

48. The numbers on the line are
1, 9, 25, ...
That is,
$1\times1,\ 3\times3,\ 5\times5,\ \ldots$
So, the 10th number is
$19\times19=361$.

$$\begin{array}{r} 76 \\ 75\overline{)5757} \\ 525 \\ \hline 507 \\ 450 \\ \hline 57 \end{array}$$

49. Certainly A>B. Since AB×A has B as the ones digit. So the candidates for B×A=...B are
$2\times6=12$,
$4\times6=24,\ 5\times7=35,\ 5\times9=45$.
Among them, only AB=75 satisfies all conditions.

50. There are 9 possibilities.


B
A−D−C
C−D−A
D−A−C
C
A−D−B
D−A−B
D−B−A
D
A−B−C
C−A−B
C−B−A