

Grade 4 · Number and Shape Patterns · Worksheet Answer Key

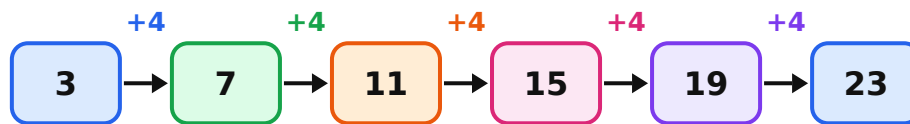
Common Core 4.OA.C.5 · mathovore.fr

This answer key gives a full worked solution for every problem on the number patterns worksheet. Check each pattern by repeating the rule between neighbors, and compare the features you noticed with the ones listed here.

Grade 4 Common Core: 4.OA.C.5

Problem 1: Add 4 from 3

$3+4=7$, $7+4=11$, $11+4=15$, $15+4=19$, $19+4=23$.



The completed chain.

3,7,11,15,19,23

Problem 2: Subtract 5 from 50

$50-5=45$, $45-5=40$, $40-5=35$, $35-5=30$, $30-5=25$.

50,45,40,35,30,25

Problem 3: Doubling pattern

Double each term: $1 \times 2 = 2$, $2 \times 2 = 4$, $4 \times 2 = 8$, $8 \times 2 = 16$, $16 \times 2 = 32$, $32 \times 2 = 64$.

1,2,4,8,16,32,64

Problem 4: Find the rule

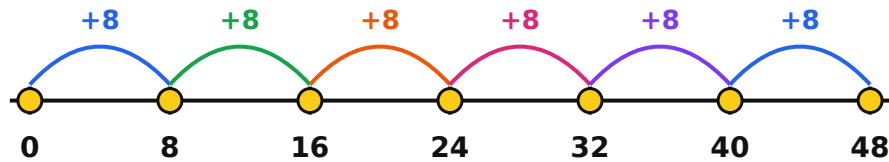
$14-8=6$, $20-14=6$, $26-20=6$. The rule is add 6.

$26+6=32$, $32+6=38$, $38+6=44$.

Rule: add 6. Next terms: 32,38,44.

Problem 5: Hops of equal size

$8-0=8$ and $16-8=8$, so the rule is add 8. Then $24+8=32$, $32+8=40$, $40+8=48$.



The completed number line.

Rule: add 8. Missing: 32, 40, 48.

Problem 6: Odd and even terms

The terms are 1, 4, 7, 10, 13, 16, 19, 22.

The even terms are 4, 10, 16, 22. They are the 2nd, 4th, 6th, and 8th terms.

The terms switch between odd and even. Adding 3 (an odd number) changes odd to even and even to odd.

Problem 7: Multiples of 5

The terms are 0, 5, 10, 15, 20, 25, 30, 35, 40.

The ones digits are 0, 5, 0, 5, 0, 5, 0, 5, 0.

The ones digits alternate between 0 and 5, and every term is a multiple of 5.

Problem 8: Add 10 from 7

The terms are 7, 17, 27, 37, 47, 57.

Adding 10 changes the tens digit only.

The ones digit is 7 in every term.

Problem 9: Toothpick squares

The counts are 4, 7, 10. Each new square adds 3 toothpicks, so the rule is start at 4, add 3.

Figure 4: $10+3=13$. Figure 5: $13+3=16$.



Figure 4



Figure 5

Figures 4 and 5.

Rule: start at 4, add 3. Figure 5 has 16 toothpicks.

Problem 10: Block staircases

The counts are 1, 3, 6, 10. The differences are $3-1=2$, $6-3=3$, $10-6=4$. The step grows by 1 each time.

The next difference is 5, so Figure 5 has $10+5=15$ blocks.

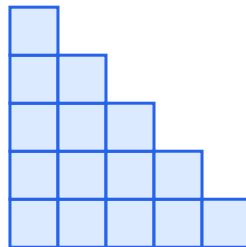


Figure 5

Figure 5 has 5 rows: $5 + 4 + 3 + 2 + 1 = 15$ blocks.

The growth increases by 1 each time (2, 3, 4, ...). Figure 5 has 15 blocks.

Problem 11: Complete the table

$14+6=20$ and $20+6=26$.

Term number	1	2	3	4	5
Term	2	8	14	20	26

The completed table.

Terms: 2,8,14,20,26. Every term is even.

Problem 12: Match the rule

Test A: $4+6=10$, $10+6=16$, $16+6=22$. It works.

Test B: $10+6=16$, not 15. Test C adds 4.

A

Problem 13: Find the mistake

$5+7=12$ and $12+7=19$ are correct. But $19+7=26$, not 25. Then $26+7=33$, $33+7=40$.

The fourth term should be 26. Correct terms: 5,12,19,26,33,40.

Problem 14: Add 25

The terms are 0,25,50,75,100,125,150,175,200.

The 7th term is 150.

The last two digits repeat: 00, 25, 50, 75, 00, 25, 50, 75, 00.

7th term: 150. The last two digits repeat 00, 25, 50, 75.

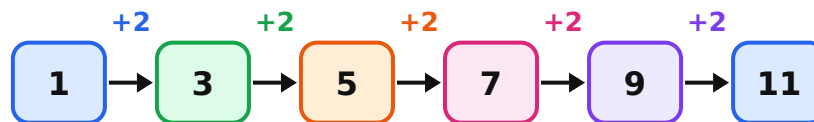
Problem 15: Multiply by 3

$2\times 3=6$, $6\times 3=18$, $18\times 3=54$, $54\times 3=162$.

2,6,18,54,162. Every term is even, because an even number times 3 is even.

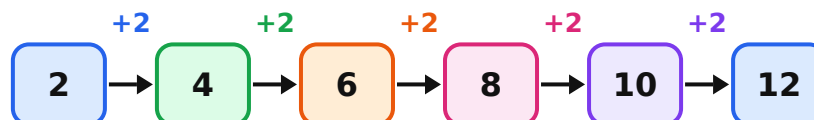
Problem 16: Two patterns

A: 1,3,5,7,9,11.



Pattern A.

B: 2,4,6,8,10,12.



Pattern B.

Each term of B is 1 more than the term of A in the same place. A has only odd terms and B has only even terms, so they never match.

Pattern A is all odd; B is all even; they never match.

Problem 17: Shaded numbers

The shaded numbers are 4, 12, 20, 28, and so on. Each is $12 - 4 = 8$ more than the one before, and the last is 100.

All are multiples of 4: 4×1 , 4×3 , 4×5 , ... and they are all even.

Rule: start at 4, add 8. Every shaded number is a multiple of 4 (and even).

Problem 18: Pages each day

The pages by day are 12,16,20,24,28,32,36,40.

The 6th day is 32 pages, and 40 pages is the 8th day.

32 pages on day 6; 40 pages on day 8.

Problem 19: Saving for cleats

The savings are \$15,\$25,\$35,\$45,\$55,\$65.

The ones digit of every amount is 5, because adding 10 does not change the ones digit. The number 100 ends in 0.

No, Liam never has exactly \$100.

Problem 20: Stacked cans

The rows have 2,4,6,8,10,12,14,16 cans, so row 8 has 16.

Total: $2+4+6+8=20$ and $10+12+14+16=52$, and $20+52=72$.

Row 8 has 16 cans; the total is 72 cans.

Problem 21: Doubling views

Double each day: 5,10,20,40,80,160.

Day 5 has 80, which is not more than 100. Day 6 has 160.

Day 6.

Problem 22: Road trip miles

The totals are 55,110,165,220,275,330.

The total 330 is the 6th term, so it takes 6 hours.

The ones digits alternate 5, 0, 5, 0, 5, 0.

6 hours. The ones digits alternate between 5 and 0.