

Sum of Odd Numbers

Unit: Number Play - Student Practice Worksheet

Overview: Pixel asked for the sum of the first 5 odd numbers: $1+3+5+7+9$. Kabir reached for his fingers to add them one at a time. Anaya said '25' immediately, without adding a single pair.

Practice Questions (30 Total)

Section A - Easy

Q1. The coloured layers are 1, then 3, then 5 dots. What total square do they make?



- ☐ A. 9
- ☐ B. 8
- ☐ C. 6
- ☐ D. 12

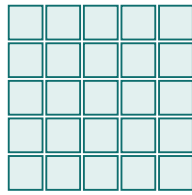
Q2. The sum of the first n odd numbers always equals what?

- ☐ A. n squared
- ☐ B. n
- ☐ C. $2n$
- ☐ D. $n + 1$

Q3. What is $1+3$?

- ☐ A. 3
- ☐ B. 4
- ☐ C. 5
- ☐ D. 6

Q4. The 5-by-5 grid is the first 5 odd numbers stacked as layers. How many cells?



5 odd layers

$$5 \text{ by } 5 = 25$$

- ☐ A. 20
- ☐ B. 15
- ☐ C. 30
- ☐ D. 25

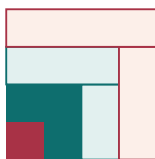
Q5. What is the sum of the first 1 odd number, just 1?

- ☐ A. 0
- ☐ B. 2
- ☐ C. 3
- ☐ D. 1

Q6. What is the sum of the first 6 odd numbers?

- ☐ A. 30
- ☐ B. 36
- ☐ C. 42
- ☐ D. 25

Q7. Four L-shaped layers grow a 4-by-4 square. What is $1+3+5+7$?



four L-layers

- ☐ A. 14
- ☐ B. 12
- ☐ C. 16
- ☐ D. 20

Q8. The first 4 odd numbers fill a square. Which square number is that total?

- ☐ A. 16
- ☐ B. 12
- ☐ C. 20
- ☐ D. 10

Q9. What is the sum of the first 8 odd numbers?

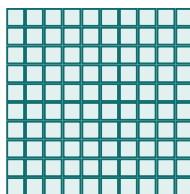
- ☐ A. 56
- ☐ B. 72
- ☐ C. 64
- ☐ D. 49

Q10. Count 7 odd terms and square that count, then check by adding. What is the sum of the first 7 odd numbers?

- ☐ A. 42
- ☐ B. 49
- ☐ C. 56
- ☐ D. 36

Section B - Medium

Q11. The 10-by-10 grid is the first 10 odd layers. How many cells?



10 odd numbers

- ☐ A. 100
- ☐ B. 90
- ☐ C. 110
- ☐ D. 81

Q12. How does Pixel's dot picture show that each odd number grows a perfect square?

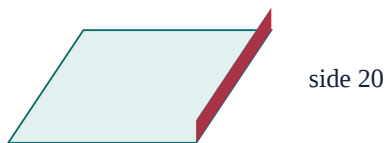
- ☐ A. It shows the dots forming a triangle, not a square
- ☐ B. Each new odd-numbered layer of dots adds one row and one column to the square
- ☐ C. It proves the total is never a perfect square

- ☐ D. It only works for the first three odd numbers

Q13. If the sum of the first n odd numbers is 49, what is n ?

- ☐ A. 8
☐ B. 7
☐ C. 6
☐ D. 49

Q14. The tilted square has side 20. What is the sum of the first 20 odd numbers?



- ☐ A. 380
☐ B. 420
☐ C. 361
☐ D. 400

Q15. What is the 6th odd number in the sequence 1, 3, 5, 7, 9, 11?

- ☐ A. 9
☐ B. 13
☐ C. 11
☐ D. 12

Q16. What is the sum of the first 12 odd numbers?

- ☐ A. 132
☐ B. 121
☐ C. 156
☐ D. 144

Q17. The card shows 15×15 . What is the sum of the first 15 odd numbers?

15×15

- ☐ A. 225
- ☐ B. 210
- ☐ C. 196
- ☐ D. 240

Q18. What is the last odd number added when finding the sum of the first 9 odd numbers?

- ☐ A. 17
- ☐ B. 19
- ☐ C. 15
- ☐ D. 18

Q19. If the sum of the first n odd numbers is 121, what is n ?

- ☐ A. 10
- ☐ B. 12
- ☐ C. 11
- ☐ D. 121

Q20. The 9th odd number is 17. Square 9, and check the sum of the first 9 odds. What total?

- ☐ A. 72
- ☐ B. 81
- ☐ C. 90
- ☐ D. 64

Section C - Challenge

Q21. The card shows 25×25 . What is the sum of the first 25 odd numbers?

$$25 \times 25$$

- ☐ A. 625
- ☐ B. 600
- ☐ C. 650
- ☐ D. 576

Q22. Compare the sum of the first n odd numbers (n squared) with the sum of the first n even numbers (n times $n+1$). Which is bigger for the same n ?

- ☐ A. The odd-number sum is always bigger
- ☐ B. They are always exactly equal
- ☐ C. The even-number sum is always bigger, by exactly n
- ☐ D. It depends on whether n is odd or even

Q23. If the sum of the first n odd numbers is 900, what is n and what is the last odd number added?

- ☐ A. $n=30$, last odd number 60
- ☐ B. $n=30$, last odd number 59
- ☐ C. $n=45$, last odd number 89
- ☐ D. $n=15$, last odd number 29

Q24. The hollow circle is 7, skipped among the first 7 odds. What wrong total is that?



- ☐ A. 42, which is 7 less
- ☐ B. 49, exactly the same
- ☐ C. 36, which is 13 less
- ☐ D. 56, which is 7 more

Q25. Anaya notices the odd-number sum needs no pairing step, unlike the natural-number sum. Why is that?

- ☐ A. Pairing does not exist as a mathematical idea
- ☐ B. Odd numbers cannot be paired under any circumstance
- ☐ C. Each odd term directly matches a growing square layer, giving the answer without pairing
- ☐ D. The odd-number sum has no known shortcut at all

Q26. What is the sum of odd numbers from 11 to 19 (that is, 11, 13, 15, 17, 19)?

- ☐ A. 70
- ☐ B. 80
- ☐ C. 65
- ☐ D. 75

Q27. The card shows 100×100 . What is the sum of the first 100 odd numbers?

100×100

- ☐ A. 10,000
- ☐ B. 9,900
- ☐ C. 10,100
- ☐ D. 5,050

Q28. Why is the odd-number sum pattern considered a natural companion to the story's earlier square-and-triangle bean patterns?

- ☐ A. They use completely unrelated ideas with no overlap
- ☐ B. Both build perfect squares by adding successive odd-numbered layers of dots or beans
- ☐ C. Only triangular numbers involve odd numbers at all
- ☐ D. Squares are built from even numbers only, not odd ones

Q29. What is the sum of the first 30 odd numbers?

- ☐ A. 870
- ☐ B. 900
- ☐ C. 930
- ☐ D. 841

Q30. Find the 20th odd number ($2 \times 20 - 1$) and check it against 20 squared minus 19 squared. Which option matches?

- ☐ **A.** 40, and it equals the 20th square exactly
- ☐ **B.** 38, and it equals twice the 19th square
- ☐ **C.** 20, and it has no connection to square numbers
- ☐ **D.** 39, and it equals the 20th square minus the 19th square

Answer Key

Q1: (A) (a) 9. There are 3 terms, so 3 squared is 9.

Q2: (A) (a) n squared.

Q3: (B) (b) 4. There are 2 terms, so 2 squared is 4.

Q4: (D) (d) 25. There are 5 terms, so 5 squared is 25.

Q5: (D) (d) 1. There is 1 term, so 1 squared is 1.

Q6: (B) (b) 36. There are 6 terms, so 6 squared is 36.

Q7: (C) (c) 16. There are 4 terms, so 4 squared is 16.

Q8: (A) (a) 16. There are 4 terms, so 4 squared is 16.

Q9: (C) (c) 64. There are 8 terms, so 8 squared is 64.

Q10: (B) (b) 49. There are 7 terms, so 7 squared is 49.

Q11: (A) (a) 100. There are 10 terms, so 10 squared is 100.

Q12: (B) (b) Each new odd-numbered layer of dots adds one row and one column to the square.

Q13: (B) (b) 7. Since 7 squared is 49.

Q14: (D) (d) 400. There are 20 terms, so 20 squared is 400.

Q15: (C) (c) 11. It is the 6th term in the odd-number sequence.

Q16: (D) (d) 144. There are 12 terms, so 12 squared is 144.

Q17: (A) (a) 225. There are 15 terms, so 15 squared is 225.

Q18: (A) (a) 17. The 9th odd number is $2 \times 9 - 1 = 17$.

Q19: (C) (c) 11. Since 11 squared is 121.

Q20: (B) (b) 81. There are 9 terms, so 9 squared is 81.

Q21: (A) (a) 625. There are 25 terms, so 25 squared is 625.

Q22: (C) (c) The even-number sum is always bigger, by exactly n . $n(n+1)$ minus n squared equals n .

Q23: (B) (b) $n=30$, last odd number 59. Since 30 squared is 900, and the 30th odd number is $2 \times 30 - 1 = 59$.

Q24: (A) (a) 42, which is 7 less than the correct total. Skipping the term 7 reduces the total by exactly 7.

Q25: (C) (c) Each odd term directly matches a growing square layer, giving the answer without pairing.

Q26: (D) (d) 75. Take (sum of first 10 odd numbers, 100) minus (sum of first 5 odd numbers, 25): $100 - 25$ equals 75.

Q27: (A) (a) 10,000. There are 100 terms, so 100 squared is 10,000.

Q28: (B) (b) Both build perfect squares by adding successive odd-numbered layers of dots or beans. This is exactly the L-shaped layer idea from the earlier square-number pattern.

Q29: (B) (b) 900. There are 30 terms, so 30 squared is 900.

Q30: (D) (d) 39, and it equals the 20th square minus the 19th square. The 20th odd number is $2 \times 20 - 1 = 39$, and $400 - 361 = 39$, confirming the connection.

You've got this! Keep learning and shining! - Ruchi Math Coaching