

Mathematics

Curiosities & Perplexities

- for ages 10 and up -

These printable pages will be added to as time goes along.

Solutions are in **red on page immediately following exercises.**

Positive Even Integers Greater Than 2

Every positive even integer can be written as the sum of two primes.

Examples:

$$6=3+3 \quad 8=3+5 \quad 10=3+7 \quad 18=7+11 \quad 20=7+13$$

Challenge: Write two primes that add to the following even numbers.

- | | | | | |
|----------------|----------------|----------------|----------------|-----------------|
| (1) 14 | (2) 22 | (3) 30 | (4) 32 | (5) 34 |
| (6) 36 | (7) 38 | (8) 40 | (9) 50 | (10) 60 |
| (11) 64 | (12) 68 | (13) 70 | (14) 76 | (15) 78 |
| (16) 80 | (17) 84 | (18) 92 | (19) 96 | (20) 100 |
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Solutions to Positive Even Integers Greater Than 2

*(in cases where there are multiple solutions
up to three solutions are given)*

- (1) $11+3, 7+7$
- (2) $17+5, 3+19, 11+11$
- (3) $19+11, 7+23, 13+17$
- (4) $19+13, 3+29$
- (5) $23+11, 5+29, 17+17$
- (6) $17+19, 5+31, 7+29$
- (7) $7+31, 19+19$
- (8) $23+17, 29+11, 3+37$
- (9) $31+19, 37+13, 47+3$
- (10) $31+29, 23+37, 19+41$
- (11) $23+41, 5+59, 11+53$
- (12) $31+37, 7+61$
- (13) $3+67, 11+59, 17+53$
- (14) $47+29, 5+71, 17+59$
- (15) $41+37, 5+73, 7+71$
- (16) $19+61, 7+73, 13+67$
- (17) $79+5, 11+73, 13+71$
- (18) $89+3, 13+79, 19+73$
- (19) $79+17, 13+83, 23+73$
- (20) $53+47, 7+93, 11+89$



Odd Numbers Greater Than 7

Odd numbers greater than 7 can be expressed as the sum of three odd primes.

Examples: $9=3+3+3$ $17=3+3+11$ $19=3+5+11$
 $37=3+11+23$

Challenge:

Write three odd primes that add to the following odd numbers...

1. **41** 2. **29** 3. **23** 4. **53**

5. **43** 6. **61** 7. **67** 8. **47**

9. **59** 10. **31** 11. **71** 12. **79**

13. **83** 14. **89** 15. **97** 16. **101**

17. **103** 18. **113** 19. **127** 20. **131**



Solutions to

Odd Numbers Greater Than 7

(in cases where there are multiple solutions up to three solutions are given)

- 1.** $3+7+31, 5+13+23, 7+11+23$
- 2.** $3+7+19, 5+5+19, 3+3+23$
- 3.** $3+7+13, 5+5+13, 5+7+11$
- 4.** $3+7+43, 3+13+37, 5+5+43$
- 5.** $5+19+19, 11+13+19, 11+15+17$
- 6.** $7+13+41, 3+17+41, 3+5+53$
- 7.** $11+19+37, 13+17+37, 7+23+37$
- 8.** $5+13+29, 7+11+29, 7+17+23$
- 9.** $5+7+47, 31+23+5, 17+19+23$
- 10.** $7+7+17, 3+11+17, 5+7+19$
- 11.** $3+31+37, 29+11+31, 29+29+13$
- 12.** $7+31+41, 19+19+41, 19+23+27$
- 13.** $11+31+41, 13+29+41, 33+37+13$
- 14.** $11+37+41, 7+41+41, 5+41+43$
- 15.** $19+37+41, 23+37+37, 29+31+37$
- 16.** $19+41+41, 23+37+41, 29+31+41$
- 17.** $23+37+43, 19+41+43, 19+31+53$
- 18.** $23+37+53, 19+41+53, 5+7+101$
- 19.** $37+37+53, 3+5+119, 7+11+109$
- 20.** $37+41+53, 5+7+119, 5+19+107$

