

Square Numbers - Worksheet

Skill

Group A - Square numbers

Work out the value of each of the following:

1) $5^2 =$

2) $7^2 =$

3) $9^2 =$

4) $11^2 =$

5) $13^2 =$

6) $15^2 =$

7) $2^2 + 3^2 =$

8) $7^2 - 3^2 =$

9) $10^2 + 2^2 =$

10) $7^2 \times 2^2 =$

11) $8^2 - 3^2 \times 2^2 =$

12) $9^2 \div 3^2 - 2^2 =$

Group B - Square roots

Work out the value of each of the following:

1) $\sqrt{25} =$

2) $\sqrt{49} =$

3) $\sqrt{100} =$

4) $\sqrt{196} =$

5) $\sqrt{256} =$

6) $\sqrt{400} =$

7) $\sqrt{25} + \sqrt{4} =$

8) $\sqrt{36} - \sqrt{16} =$

9) $\sqrt{64} - \sqrt{9} =$

10) $\sqrt{100} \times \sqrt{144} =$

11) $\sqrt{64} \div \sqrt{16} \times \sqrt{4} =$

12) $\sqrt{49} \times \sqrt{121} + \sqrt{169} =$

Group C - Solving for equations with squares

Work out the positive value of x in each of the equations below:

1) $x^2 = 36$

2) $x^2 = 144$

3) $2x^2 = 32$

4) $4x^2 = 36$

5) $x^2 + 7 = 88$

6) $x^2 - 9 = 0$

7) $2x^2 + 3 = 11$

8) $2x^2 - 4 = 28$

9) $6x^2 - 4 = 50$

10) $x^2 + x^2 = 50$

11) $2x^2 + 2x^2 = 36$

12) $4x^2 - 2x^2 = 18$

Square Numbers - Worksheet

Applied

1) Here is a list of numbers:

1, 3, 5, 9, 16, 18, 25, 32, 45

From the list of numbers write down:

(a) All the square numbers

(b) The square root of 81

(c) The square root of 256

2) (a) A square has an area of 225m^2 . What is the side length of the square?

(b) A square has an area of 361m^2 . What is the perimeter of the square?

3) A student answered the questions below. Can you spot any mistakes?

$$\sqrt{64} = 32$$

$$\sqrt{36} = 18$$

4) 65 can be written as the sum of 2 different square numbers. What are the two square numbers?

Square Numbers - Exam Questions

1) Work out the value of:

(a) 3^2 **(1)**

(b) 4×7^2 **(1)**

(c) $6^2 \times 7^2$ **(1)**
(3 marks)

2) Work out the value of:

(a) $\sqrt{144}$ **(1)**

(b) $\sqrt{36} \times \sqrt{4}$ **(1)**

(c) $\sqrt{81} \div \sqrt{9} \times \sqrt{4}$ **(1)**
(3 marks)

3) Arrange these values in order starting with the smallest:

$2^2 + 3^2$, $\sqrt{144}$, $\sqrt{100}$, 3^2 , $\sqrt{16} \times \sqrt{4}$, 2.5^2

.....
(2 marks)

4) Lily says the difference between 2 consecutive square numbers is always odd. Is she correct?
Explain your answer.

.....
(2 marks)

Square Numbers - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the value of each of the following: 1) $5^2 =$ 2) $7^2 =$ 3) $9^2 =$ 4) $11^2 =$ 5) $13^2 =$ 6) $15^2 =$ 7) $2^2 + 3^2 =$ 8) $7^2 - 3^2 =$ 9) $10^2 + 2^2 =$ 10) $7^2 \times 2^2 =$ 11) $8^2 - 3^2 \times 2^2 =$ 12) $9^2 \div 3^2 - 2^2 =$	1) 25 2) 49 3) 81 4) 121 5) 169 6) 225 7) 13 8) 40 9) 104 10) 196 11) 28 12) 5
Group B	Work out the value of each of the following: 1) $\sqrt{25} =$ 2) $\sqrt{49} =$ 3) $\sqrt{100} =$ 4) $\sqrt{196} =$ 5) $\sqrt{256} =$ 6) $\sqrt{400} =$ 7) $\sqrt{25} + \sqrt{4} =$ 8) $\sqrt{36} - \sqrt{16} =$ 9) $\sqrt{64} - \sqrt{9} =$ 10) $\sqrt{100} \times \sqrt{144} =$ 11) $\sqrt{64} \div \sqrt{16} \times \sqrt{4} =$ 12) $\sqrt{49} \times \sqrt{121} + \sqrt{169} =$	1) 5 2) 7 3) 10 4) 14 5) 16 6) 20 7) 7 8) 2 9) 5 10) 120 11) 4 12) 90

Square Numbers - Answers

Group C	Work out the positive value of x in each of the equations below: 1) $x^2 = 36$ 2) $x^2 = 144$ 3) $2x^2 = 32$ 4) $4x^2 = 36$ 5) $x^2 + 7 = 88$ 6) $x^2 - 9 = 0$ 7) $2x^2 + 3 = 11$ 8) $2x^2 - 4 = 28$ 9) $6x^2 - 4 = 50$ 10) $x^2 + x^2 = 50$ 11) $2x^2 + 2x^2 = 36$ 12) $4x^2 - 2x^2 = 18$	1) $x = 6$ 2) $x = 12$ 3) $x = 4$ 4) $x = 3$ 5) $x = 9$ 6) $x = 3$ 7) $x = 2$ 8) $x = 4$ 9) $x = 3$ 10) $x = 5$ 11) $x = 3$ 12) $x = 3$
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Square Numbers - Answers

	Question	Answer
	Applied Questions	
1)	Here is a list of numbers: 1, 3, 5, 9, 16, 18, 25, 32, 45 a) From the list of numbers write down: All the square numbers b) The square root of 81 c) The square root of 256	a) 1, 9, 16, 25 b) 9 c) 16
2)	a) A square has an area of 225m^2. What is the side length of the square? b) A square has an area of 361m^2. What is the perimeter of the square?	a) 15m b) 76m
3)	A student answered the questions below. Can you spot any mistakes? $\sqrt{64} = 32$ $\sqrt{36} = 18$	The student has halved the numbers rather than finding the square root. The first answer should be 8 and the second should be 6.
4)	65 can be written as the sum of 2 different square numbers. What are the two square numbers?	64 and 1

Square Numbers - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Work out the value of: 3^2	(a) 9	(1)
(b)	4×7^2	(b) 196	(1)
(c)	$6^2 \times 7^2$	(c) 1764	(1)
2) (a)	Work out the value of: $\sqrt{144}$	(a) 12	(1)
(b)	$\sqrt{36} \times \sqrt{4}$	(b) 12	(1)
(c)	$\sqrt{81} \div \sqrt{9} \times \sqrt{4}$	(c) 6	(1)
3)	Arrange these values in order starting with the smallest: $(2^2 + 3^2)$, $\sqrt{144}$, $\sqrt{100}$, 3^2 , $(\sqrt{16} \times \sqrt{4})$, 2.5^2	3^2 , $\sqrt{100}$, 2.5^2 , $\sqrt{144}$, $2^2 + 3^2$, $\sqrt{16} \times \sqrt{4}$ 1 mark for 3 values in correct position (1) 1 mark all numbers in correct position (1)	(2)
4)	Lily says the difference between 2 consecutive square numbers is always odd. Is she correct? Explain your answer.	Yes (1) This is correct because if two square numbers are consecutive, then one is odd and one is even, and the difference between an odd and even number is always odd. E.g. $16 - 9 = 7$ (1)	(2)

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