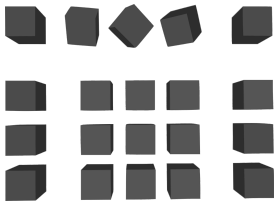
Name & Surname: _____ Class: _____ Date: _____

SQUARE AND CUBE QUEST

An explorer hunt for special numbers.



About 30 minutes Level ★★★☆☆

EXPLORER GUIDE TO SQUARES AND CUBES

Some numbers make perfect shapes, just like square tiles and stacked cubes.

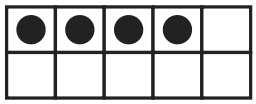
- A **square** number is a number multiplied by itself: $n^2 = n \times n$. For example, $3^2 = 3 \times 3 = 9$.
- A **cube** number is a number multiplied by itself twice: $n^3 = n \times n \times n$. For example, $2^3 = 2 \times 2 \times 2 = 8$.
- Learn these **squares**: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100 and these **cubes**: 1, 8, 27, 64, 125.

TASK A

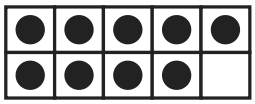
/5

Count the dots in each ten frame and write the total.

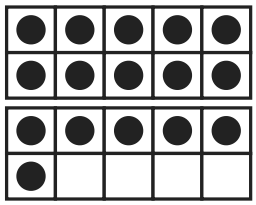
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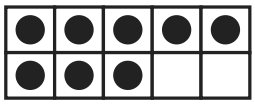
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3



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5



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FIRST CALCULATIONS

Practise writing squares and cubes.

TASK B

/10

Work out each square and cube number.

WARM UP

1 Work out 2 **squared** (2^2).

Answer: _____

2 Work out 3 **squared** (3^2).

Answer: _____

3 Work out 5 **squared** (5^2).

Answer: _____

4 Work out 2 **cubed** (2^3).

Answer: _____

PRACTISE

5 Work out 4 **squared** (4^2).

Answer: _____

6 Work out 3 **cubed** (3^3).

Answer: _____

7 Work out 10 **squared** (10^2).

Answer: _____

PROBLEM SOLVING

8 A **square** tile has sides of 6 cm. Its area is 6^2 cm^2. What is the area?

Answer: _____

9 A **cube** box has edges of 4 cm. Its volume is 4^3 cm^3. What is the volume?

Answer: _____

10 Explain how you know 20 is not a **square** number.

Answer: _____

KEY WORDS

square number: a number made by multiplying a whole number by itself

cube number: a number made by multiplying a whole number by itself twice

squared: shown by ^{2}, meaning multiplied by itself

cubed: shown by ^{3}, meaning multiplied by itself twice

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SPOT THE MISTAKE

Find where the working goes wrong.

TASK C

/6

Find the wrong step in each calculation, explain it and correct it.



Student A

Work out 5^2

1. $5^2 = 5 \times 5$
2. $= 10$
3. So the answer is 10

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student B

Work out 3^3

1. $3^3 = 3 \times 3 \times 3$
2. $= 9$
3. So the answer is 9

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student C

Work out 10^3

1. $10^3 = 10 \times 10 \times 10$
2. $= 10 \times 3 = 30$
3. So the answer is 30

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____

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DEEPER PRACTICE

Use squares and cubes to solve problems.

TASK D

/10

Solve these harder square and cube questions.

WARM UP

1 Work out 1 **squared** (1^2).

Answer: _____

2 Work out 7 **squared** (7^2).

Answer: _____

3 Work out 9 **squared** (9^2).

Answer: _____

4 Work out 5 **cubed** (5^3).

Answer: _____

PRACTISE

5 Work out 8 **squared** (8^2).

Answer: _____

6 Work out 6 **cubed** (6^3).

Answer: _____

7 Work out $7^2 + 9^2$. First find each **square**, then add.

Answer: _____

PROBLEM SOLVING

8 A **square** garden has sides of 11 m. Its area is 11^2 m^2. What is the area?

Answer: _____

9 A **cube** tower is made from 10^3 small blocks. How many small blocks is that?

Answer: _____

10 Explain how you know 64 is both a **square** number and a **cube** number.

Answer: _____

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NUMBER LINE TRAIL

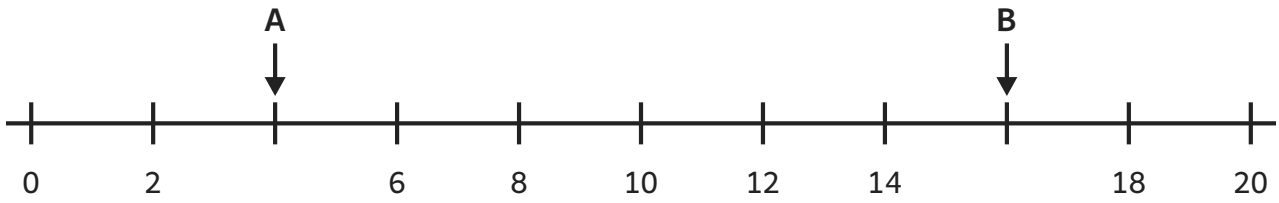
Place squares and cubes on the line.

TASK E

/6

Place the missing **square** and **cube** numbers and read the arrows.

1



A = ☐ B = ☐ Draw an arrow to show: 8

2



C = ☐ D = ☐ Draw an arrow to show: 25

TASK F

Example done for you

/3

Order the steps to work out a **cube** number.

☐ Multiply the first two numbers, for example 3 × 3 = 9.

☐ Multiply that answer by the third number, for example 9 × 3 = 27.

1 Write the number three times with ×, for example 3 × 3 × 3.

☐ Write the answer with cubed notation, for example $3^3 = 27$.

HOW DID I DO?

Circle a face for each line.

I can recognise square numbers and cube numbers. ☹ 😐 ☺

I can use the notation for squared and cubed. ☹ 😐 ☺

I can explain how to work out squares and cubes. ☹ 😐 ☺

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Answer sheet: Square and Cube Quest

Task A

1. 4
2. 9
3. 16
4. 8
5. 1

Task B

1. 4
2. 9
3. 25
4. 8
5. 16
6. 27
7. 100
8. 36 cm^2
9. 64 cm^3
10. $4^2 = 16$ and $5^2 = 25$, so 20 is between two square numbers.

Task C

1. Step 2 is wrong: They doubled 5 instead of squaring it. Squaring means multiply the number by itself. Correct answer: 25
2. Step 2 is wrong: They only multiplied 3 × 3. A cube number needs three 3s multiplied together. Correct answer: 27
3. Step 2 is wrong: They multiplied 10 by 3. Cubing means 10 × 10 × 10. Correct answer: 1000

Task D

1. 1
2. 49
3. 81
4. 125
5. 64
6. 216
7. 130
8. 121 m^2
9. 1000
10. $64 = 8 \times 8$, so $8^2 = 64$, and $64 = 4 \times 4 \times 4$, so $4^3 = 64$.

Task E

1. A = 4; B = 16; arrows at 8
2. C = 9; D = 27; arrows at 25

Task F

1. Write the number three times with ×, for example 3 × 3 × 3. 2. Multiply the first two numbers, for example 3 × 3 = 9. 3. Multiply that answer by the third number, for example 9 × 3 = 27. 4. Write the answer with cubed notation, for example $3^3 = 27$.

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