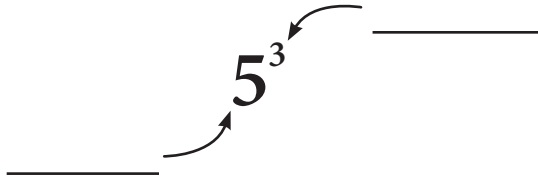


Intro to Exponents

1 Label the parts of this expression.



2 Fill in the blanks.

If a number is “squared” that means it is raised to the _____ power.

If a number is “cubed” that means it is raised to the _____ power.

3 Re-write this repeated multiplication in exponent form.

$$7 \times 7 \times 7 \times 7$$

4 Re-write this repeated multiplication in exponent form.

$$2 \times 2 \times 2 \times 2 \times 2 \times 2$$

5 Calculate these “squares”. (Hint: Use your multiplication table.)

$$6^2 = \quad 7^2 =$$

$$9^2 = \quad 12^2 =$$

6 Calculate this exponent.

$$3^3 =$$

7 Calculate this exponent.

$$14^2 =$$

8 Calculate this exponent.

$$10^4 =$$

9 Use the exponent button (x^y) on a calculator to find the value of this exponent.



$$2^{10} =$$

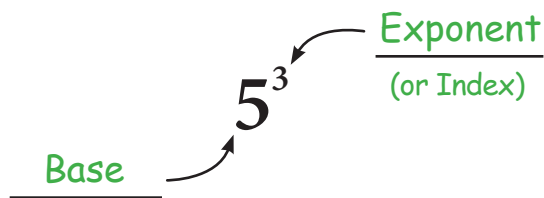
10 Use the exponent button (x^y) on a calculator to find the value of this exponent.



$$5^7 =$$

Intro to Exponents

1 Label the parts of this expression.



2 Fill in the blanks.

If a number is “squared” that means it is raised to the 2nd power.

If a number is “cubed” that means it is raised to the 3rd power.

3 Re-write this repeated multiplication in exponent form.

$$7 \times 7 \times 7 \times 7$$

$$7^4$$

4 Re-write this repeated multiplication in exponent form.

$$2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$2^6$$

5 Calculate these “squares”. (Hint: Use your multiplication table.)

$$6^2 = 36 \quad 7^2 = 49$$

$$9^2 = 81 \quad 12^2 = 144$$

6 Calculate this exponent.

$$3^3 = 3 \times 3 \times 3 = 27$$

7 Calculate this exponent.

$$14^2 = 14 \times 14 = 196$$

8 Calculate this exponent.

$$10^4 = 10 \times 10 \times 10 \times 10$$

$$= 10,000$$

9 Use the exponent button (x^y) on a calculator to find the value of this exponent.



$$2^{10} = 1,024$$

10 Use the exponent button (x^y) on a calculator to find the value of this exponent.



$$5^7 = 78,125$$

Exponent Form

A-ITE 1

Instructions: Rewrite each repeated multiplication in exponent form.
(Note: You do NOT need to actually do the multiplication in these problems.)

1 $2 \times 2 \times 2 \times 2 = 2^4$

2 $5 \times 5 \times 5 \times 5 =$ _____

3 $15 \times 15 =$ _____

4 $7 \times 7 \times 7 \times 7 \times 7 =$ _____

5 $20 \times 20 \times 20 =$ _____

6 $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 =$ _____

7 $32 \times 32 \times 32 \times 32 \times 32 =$ _____

8 $4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 =$ _____

9 $10 \times 10 \times 10 \times 10 \times 10 =$ _____

10 $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 =$ _____

11 $1.6 \times 1.6 \times 1.6 \times 1.6 \times 1.6 =$ _____

12 $0.5 \times 0.5 \times 0.5 =$ _____

13 $614 \times 614 \times 614 \times 614 =$ _____

14 $11 \times 11 \times 11 \times 11 \times 11 \times 11 \times 11 =$ _____

15 $12.4 \times 12.4 =$ _____

Calculating "Squares"

A-ITE 2

Instructions: Use a multiplication table to find the value of each "square".

1 $5^2 = \underline{25}$

2 $4^2 = \underline{\hspace{2cm}}$

3 $6^2 = \underline{\hspace{2cm}}$

4 $9^2 = \underline{\hspace{2cm}}$

5 $7^2 = \underline{\hspace{2cm}}$

6 $1^2 = \underline{\hspace{2cm}}$

7 $3^2 = \underline{\hspace{2cm}}$

8 $8^2 = \underline{\hspace{2cm}}$

9 $10^2 = \underline{\hspace{2cm}}$

10 $11^2 = \underline{\hspace{2cm}}$

11 $12^2 = \underline{\hspace{2cm}}$

12 $0^2 = \underline{\hspace{2cm}}$

Instructions: Use a calculator to calculate the value of each "square".

1 $15^2 = \underline{225}$

2 $14^2 = \underline{\hspace{2cm}}$

3 $20^2 = \underline{\hspace{2cm}}$

4 $16^2 = \underline{\hspace{2cm}}$

5 $13^2 = \underline{\hspace{2cm}}$

6 $24^2 = \underline{\hspace{2cm}}$

7 $30^2 = \underline{\hspace{2cm}}$

8 $18^2 = \underline{\hspace{2cm}}$

9 $40^2 = \underline{\hspace{2cm}}$

10 $120^2 = \underline{\hspace{2cm}}$

Calculating Exponents

A-ITE 3

Instructions: Use a calculator to calculate the value of each exponent. (Note: Try to find a calculator that has the special exponent function (x^y) that we mentioned in the video, but if you can't, then just use the calculator to help you repeat the multiplication.)

1 $2^5 = \underline{32}$

2 $4^3 = \underline{\hspace{2cm}}$

3 $4^4 = \underline{\hspace{2cm}}$

4 $3^3 = \underline{\hspace{2cm}}$

5 $5^3 = \underline{\hspace{2cm}}$

6 $6^3 = \underline{\hspace{2cm}}$

7 $2^8 = \underline{\hspace{2cm}}$

8 $7^3 = \underline{\hspace{2cm}}$

9 $3^5 = \underline{\hspace{2cm}}$

10 $10^3 = \underline{\hspace{2cm}}$

11 $8^4 = \underline{\hspace{2cm}}$

12 $5^5 = \underline{\hspace{2cm}}$

13 $2^{10} = \underline{\hspace{2cm}}$

14 $9^3 = \underline{\hspace{2cm}}$

15 $3^6 = \underline{\hspace{2cm}}$

16 $12^3 = \underline{\hspace{2cm}}$

17 $15^3 = \underline{\hspace{2cm}}$

18 $11^4 = \underline{\hspace{2cm}}$

19 $6^5 = \underline{\hspace{2cm}}$

20 $3^{10} = \underline{\hspace{2cm}}$

Powers of Two

A-ITE 4

Instructions: Computers use a number system that has only two digits: 1 and 0. This number system is called "Binary" or "Base-2". Because this number system has only two digits, **powers of two** (which are exponents with 2 as the base) are very important in computer science. On this page, calculate the first ten powers of two.

1 $2^1 = 2 = \underline{2}$

2 $2^2 = 2 \times 2 = \underline{\hspace{2cm}}$

3 $2^3 = 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

4 $2^4 = 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

5 $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

6 $2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

7 $2^7 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

8 $2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

9 $2^9 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

10 $2^{10} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

Exponent Form

A-ITE 1

Instructions: Rewrite each repeated multiplication in exponent form.
(Note: You do NOT need to actually do the multiplication in these problems.)

1 $2 \times 2 \times 2 \times 2 = \underline{2^4}$

2 $5 \times 5 \times 5 \times 5 = \underline{5^4}$

3 $15 \times 15 = \underline{15^2}$

4 $7 \times 7 \times 7 \times 7 \times 7 = \underline{7^5}$

5 $20 \times 20 \times 20 = \underline{20^3}$

6 $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 = \underline{8^7}$

7 $32 \times 32 \times 32 \times 32 \times 32 = \underline{32^5}$

8 $4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 = \underline{4^9}$

9 $10 \times 10 \times 10 \times 10 \times 10 = \underline{10^5}$

10 $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 = \underline{3^{10}}$

11 $1.6 \times 1.6 \times 1.6 \times 1.6 \times 1.6 = \underline{1.6^5}$

12 $0.5 \times 0.5 \times 0.5 = \underline{0.5^3}$

13 $614 \times 614 \times 614 \times 614 = \underline{614^4}$

14 $11 \times 11 \times 11 \times 11 \times 11 \times 11 \times 11 = \underline{11^7}$

15 $12.4 \times 12.4 = \underline{12.4^2}$

Calculating "Squares"

A-ITE 2

Instructions: Use a multiplication table to find the value of each "square".

1 $5^2 = \underline{25}$

2 $4^2 = \underline{16}$

3 $6^2 = \underline{36}$

4 $9^2 = \underline{81}$

5 $7^2 = \underline{49}$

6 $1^2 = \underline{1}$

7 $3^2 = \underline{9}$

8 $8^2 = \underline{64}$

9 $10^2 = \underline{100}$

10 $11^2 = \underline{121}$

11 $12^2 = \underline{144}$

12 $0^2 = \underline{0}$

Instructions: Use a calculator to calculate the value of each "square".

1 $15^2 = \underline{225}$

2 $14^2 = \underline{196}$

3 $20^2 = \underline{400}$

4 $16^2 = \underline{256}$

5 $13^2 = \underline{169}$

6 $24^2 = \underline{576}$

7 $30^2 = \underline{900}$

8 $18^2 = \underline{324}$

9 $40^2 = \underline{1,600}$

10 $120^2 = \underline{14,400}$

Calculating Exponents

A-ITE 3

Instructions: Use a calculator to calculate the value of each exponent. (Note: Try to find a calculator that has the special exponent function (x^y) that we mentioned in the video, but if you can't, then just use the calculator to help you repeat the multiplication.)

1 $2^5 = \underline{32}$

2 $4^3 = \underline{64}$

3 $4^4 = \underline{256}$

4 $3^3 = \underline{27}$

5 $5^3 = \underline{125}$

6 $6^3 = \underline{216}$

7 $2^8 = \underline{256}$

8 $7^3 = \underline{343}$

9 $3^5 = \underline{243}$

10 $10^3 = \underline{1,000}$

11 $8^4 = \underline{4,096}$

12 $5^5 = \underline{3,125}$

13 $2^{10} = \underline{1,024}$

14 $9^3 = \underline{729}$

15 $3^6 = \underline{729}$

16 $12^3 = \underline{1,728}$

17 $15^3 = \underline{3,375}$

18 $11^4 = \underline{14,641}$

19 $6^5 = \underline{7,776}$

20 $3^{10} = \underline{59,049}$

Powers of Two

A-ITE 4

Instructions: Computers use a number system that has only two digits: 1 and 0. This number system is called "Binary" or "Base-2". Because this number system has only two digits, **powers of two** (which are exponents with 2 as the base) are very important in computer science. On this page, calculate the first ten powers of two.

1 $2^1 = 2 = \underline{2}$

2 $2^2 = 2 \times 2 = \underline{4}$

3 $2^3 = 2 \times 2 \times 2 = \underline{8}$

4 $2^4 = 2 \times 2 \times 2 \times 2 = \underline{16}$

5 $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = \underline{32}$

6 $2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{64}$

7 $2^7 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{128}$

8 $2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{256}$

9 $2^9 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{512}$

10 $2^{10} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = \underline{1,024}$