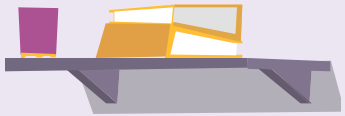
Exponentiation

Rules	Example
Any value to the power of 0 equals 1. unless the value is 0	$5^0 = 1$
When the power is raised to the power, we multiply the power by the power	$(2^3)^4 = 2^{12}$
When multiplying similar bases by different bases, we add the bases without changing the base	$3^2 \times 3^7 = 3^9$
When dividing similar bases by different bases, we subtract the exponents without Changing the base	$\frac{5^6}{5^2} = 5^4$



Exponentiation

Rules	Example
When two bases are multiplied by one and raised to one power, we can distribute the exponents over the bases	$(3\times4)^2 = 3^2\times4^2$
When two bases are divided by each other and raised to the same exponent, we can distribute the exponents over the bases	$(\frac{3}{4})^2 = \frac{3^2}{4^2}$
When we have a negative exponent, we flip the fraction and the exponent becomes positive	$5^{-2} = \frac{1}{5^2}$
When squaring the number and the negative inside the bracket, we get rid of the negative	$(-3)^2 = 9$
When a negative number is squared outside the parenthesis, the negative is unaffected	$-3^2 = -9$

Exponential Equations

If the foundations are equal, the exponents are equal

So when we have equations

that contain a variable in the exponents,

we first equate the foundations

so that we can equate the exponents

Example: $4 = 2^x$, find the value of x?

The foundations are uneven, So we first equate it: $4 \rightarrow 2^2$

The equation after equality becomes: $2^2 = 2^x$

Since the foundations are equal

The exponents are equal: $x = 2$

$(2x)^2 =$

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Exponential

A — 2^2x

B — $4x^2$

C — 2^3x^2

D — $2x^2$

$$2\,(3a^2)^3 =$$

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Exponential

A ⟵ B ⟵ C ⟵ D

A	B	C	D
$54a^6$	$27a^4$	$27a^6$	$54a^5$

$$\frac{8p^{11}}{4p^{6}} =$$

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Exponential

A — $2p^{-5}$

B — $4p^{5}$

C — $2p^{5}$

D — p^{5}

If $3^{x+1} = 1$ so x =

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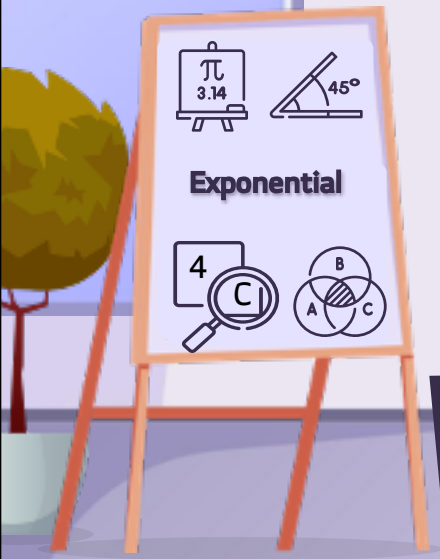

A — Zero

B — 1

C — -1

D — 2

If $\left(\frac{1}{2}\right)^x = 3$ so $\left(\frac{1}{8}\right)^x =$

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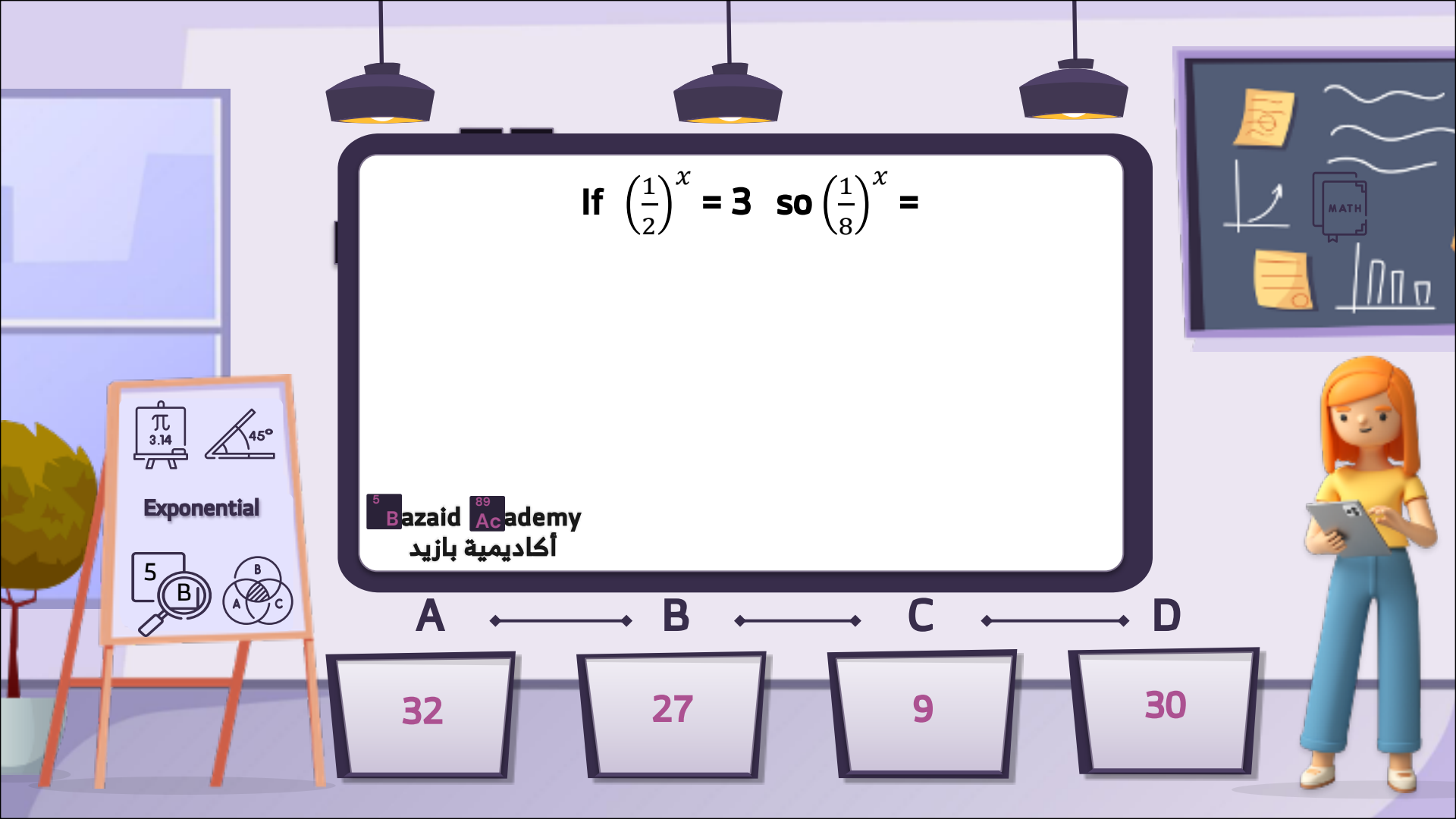
A — B — C — D

A	B	C	D
32	27	9	30



$$1^{1000} + 1^{0} =$$

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Exponential

A — B — C — D

A	B	C	D
2	3	5	10

$7^{x-3} = 7^{3x-6}$ so x =

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Exponential

A — B — C — D

A	B	C	D
20.3	$\frac{6}{4}$	44	13

$$\frac{2^3\sqrt{3}+2^5\sqrt{3}}{5\sqrt{3}}$$

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Exponential

A — B — C — D

A	B	C	D
8	4	16	32

$$\frac{18^2}{3^3}$$

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Exponential

A — B — C — D

A	B	C	D
12	10	9	8

If $9^{2x} = 3^{x+12}$, so x =

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Exponential

A — B — C — D

A	B	C	D
4	6	-1	9

$7^1 + 1^7 =$

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Exponential

A	B	C	D
7	1	7^8	8

$4x > 16y \quad \& \quad 5y > 25z$ Then….

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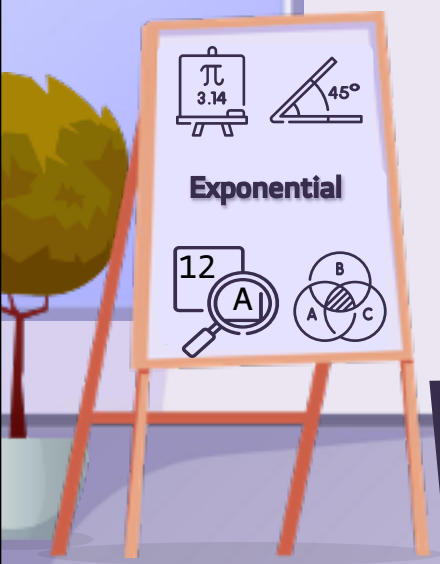
A — x>y>z

B — x>z>y

C — z>y>x

D — y>x>z



$$(4^{-2})^{-1} =$$

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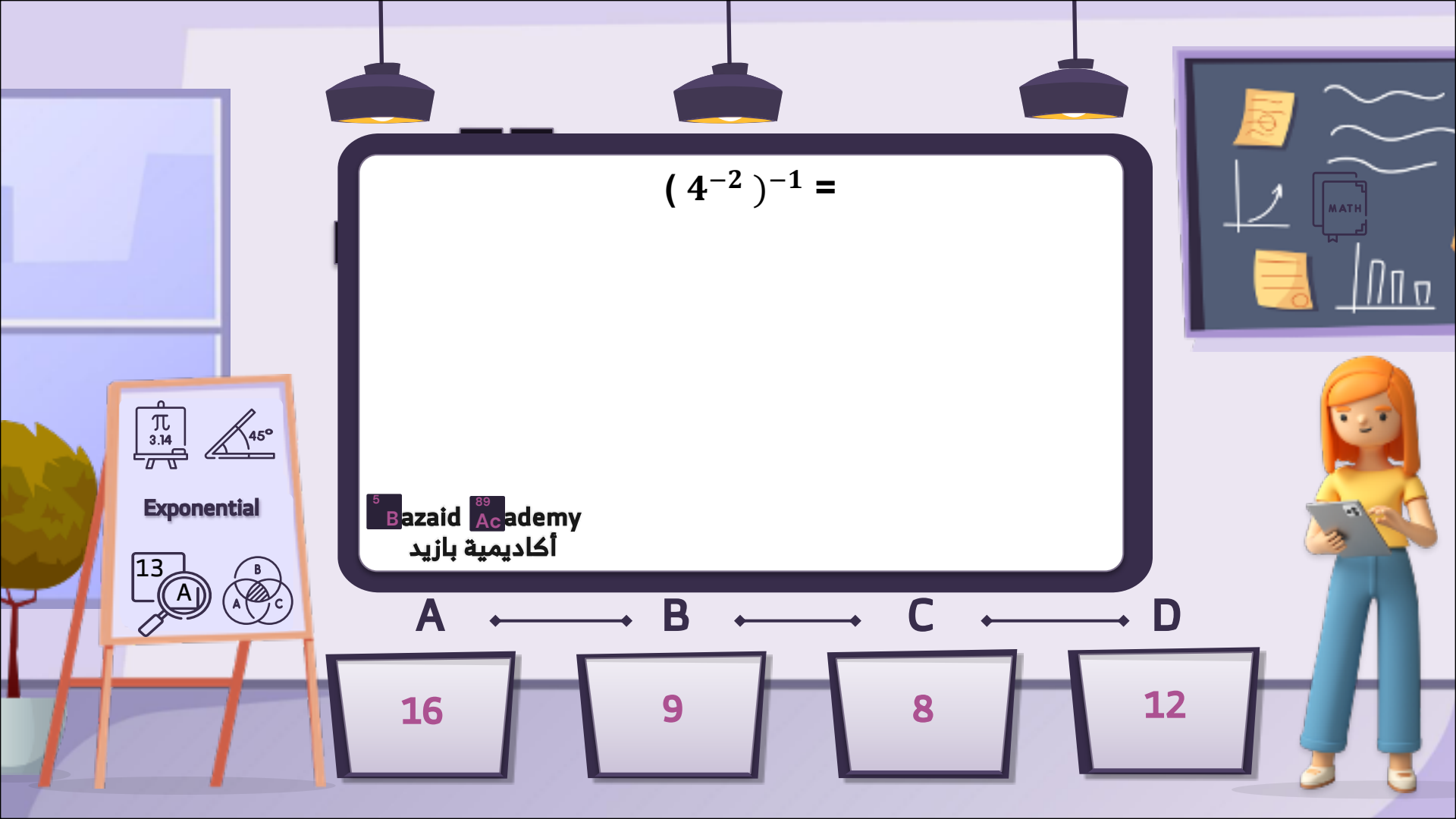
A ⟵ B ⟵ C ⟵ D

A	B	C	D
16	9	8	12



$$\left(\left(\frac{x}{y}\right)^{-4}\right)^{2} =$$

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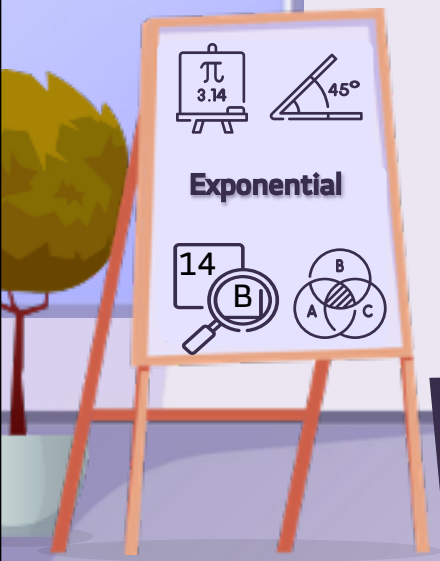

A ⟵ B ⟵ C ⟵ D

A $\left(\frac{x}{y}\right)^{8}$

B $\left(\frac{y}{x}\right)^{8}$

C $\left(\frac{y}{x}\right)^{2}$

D $\left(\frac{y}{x}\right)^{4}$

$$\frac{9^7 - 9^5}{9^4 - 9^3}$$

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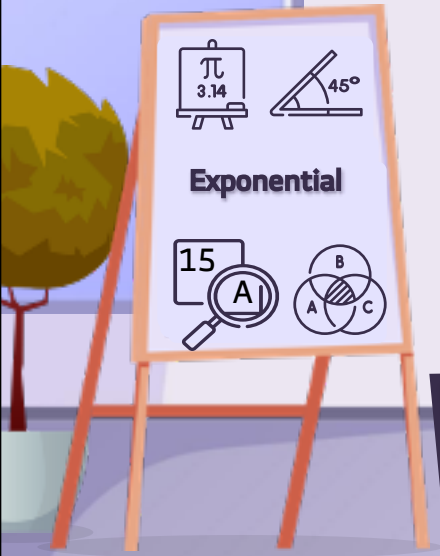

A — B — C — D

A	B	C	D
810	800	820	678

$$\left(\frac{3}{4}\right)^{x+5} = \left(2\frac{10}{27}\right)^{-2} \quad , \quad x = \ldots\ldots\ldots$$

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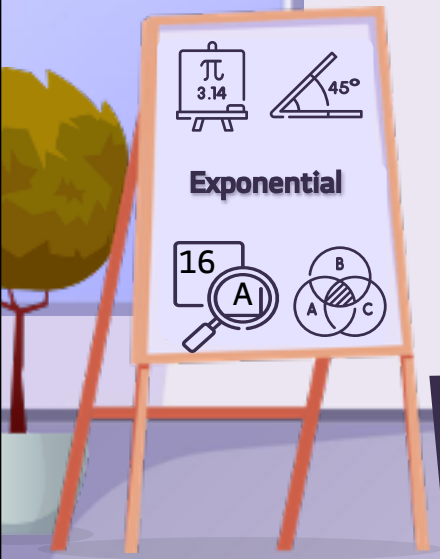

A ⟵ B ⟵ C ⟵ D

A	B	C	D
1	2	-1	-2

If $9^3 \times 3 = x^7$ so x =

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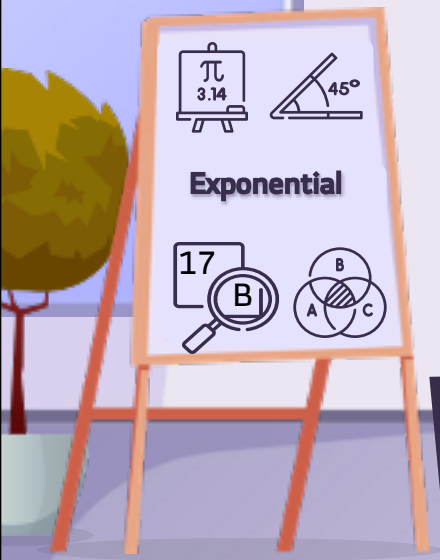
A — B — C — D

A	B	C	D
4	3	2	5



If $\frac{4^{x+1}\times 2^{x-1}}{8^{x}} = 2^{Y}$ Then Y =

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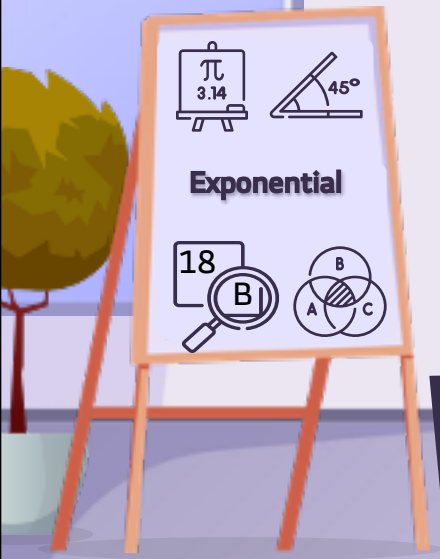

A — 3

B — 1

C — 2

D — zero

If $5^x = 6$ & $6^y = 5$, Then xy =

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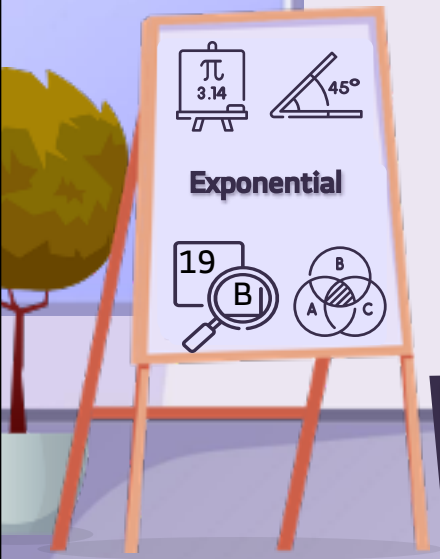

A — zero

B — 1

C — 5

D — 6

$$10^{-7} \times \left(\frac{1}{10}\right)^{-5} =$$

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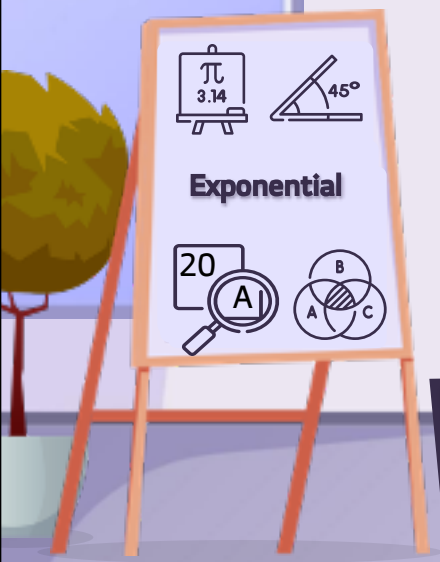

A 10^{-2}

B 10

C 10^{2}

D 1000

If $2^{30} = 2^x \times 2^y$

Then the average of $x + y =$

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Exponential

A — 15

B — 24

C — 30

D — 13

If $4^{\frac{x}{3}} = 64$ Then x =

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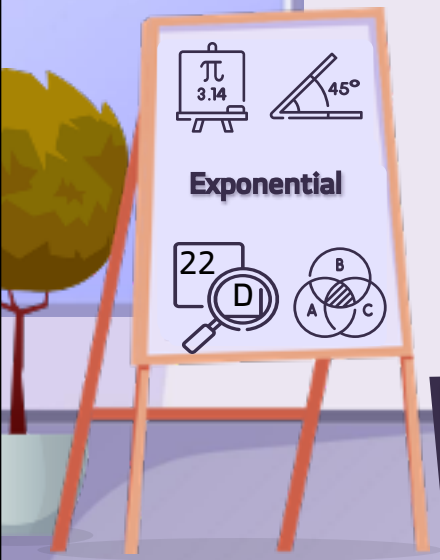

A	B	C	D
6	12	10	9

$$(0.2)^3 + (0.2)^2 + 0.2 + 2 =$$

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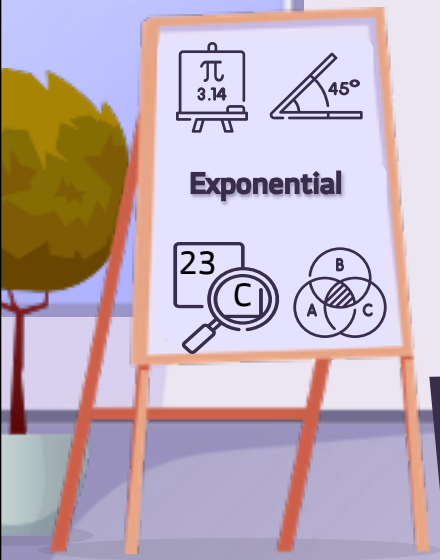

A — 2.482

B — 2.428

C — 2.248

D — 2.284

$$1^{3000} + 10^3 =$$

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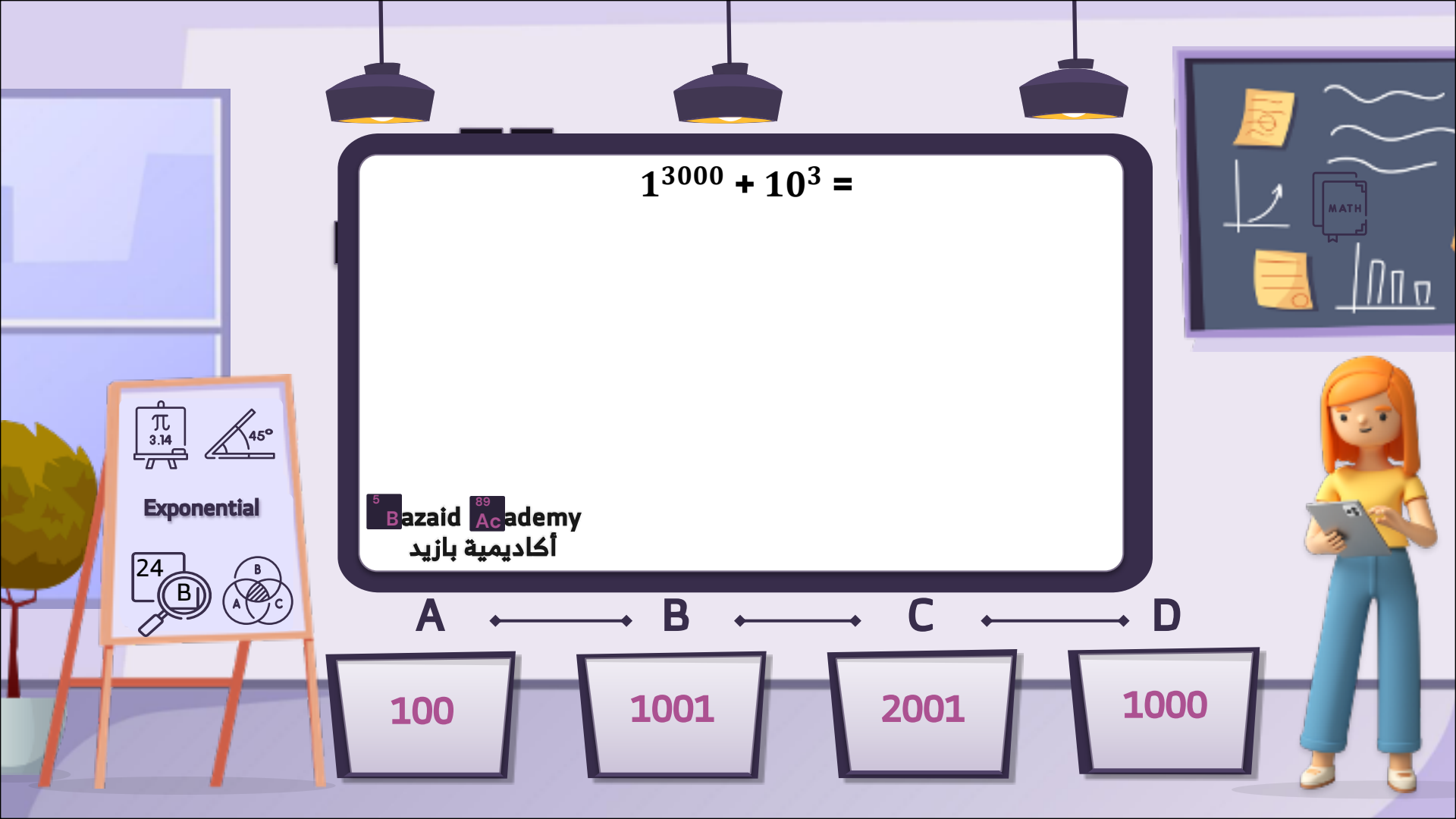
A ⟵ B ⟵ C ⟵ D

A	B	C	D
100	1001	2001	1000



If $5^{x/2} = 25$, so x =

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Exponential

A — 5

B — 2

C — 4

D — 1

If $x^2 = 1$

So the sum of the two radicals of x =

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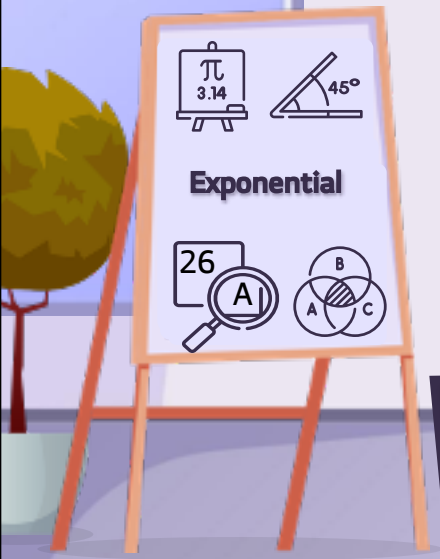

A	B	C	D
zero	1	-1	2

If $4 \times 2^4 = x^6$, so x =

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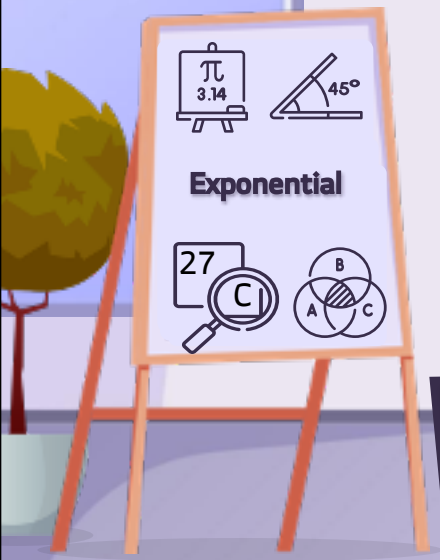
A — 4

B — 3

C — 2

D — 5



$$\frac{3^{12} \div 2^{-7}}{3^{10} \times 2^{9}} =$$

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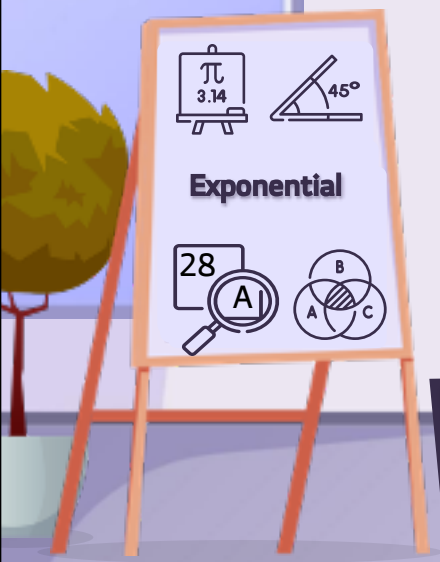

A $\left(\frac{9}{4}\right)$

B $\left(\frac{5}{9}\right)$

C $\left(\frac{4}{9}\right)$

D $\left(\frac{5}{4}\right)$

$$\frac{2^{33}\times 5^{30}}{10^{30}}=$$

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Exponential

A — 4

B — 8

C — 10

D — 12

If $5^x = 125$ & $6^y = 36$, Then xy = ...

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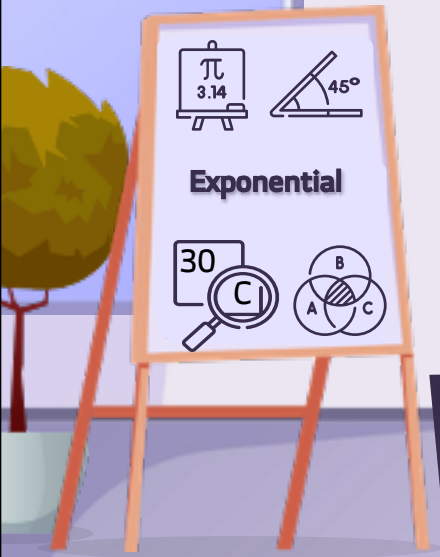

A — 4

B — 5

C — 6

D — 7

If $9^{x/3} = 81$, then x =

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Exponential

A	B	C	D
2	8	16	6

What is the value of

$$1 + 1^2 + 1^3 + 1^4 + 1^5 + \ldots + 1^{1433}$$

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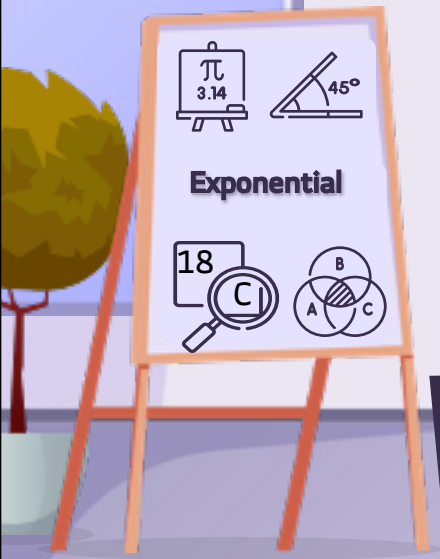
A — B — C — D

A	B	C	D
1431	1432	1433	1434



Value of A	Value of B
666^2	$+444^2$ 222^2

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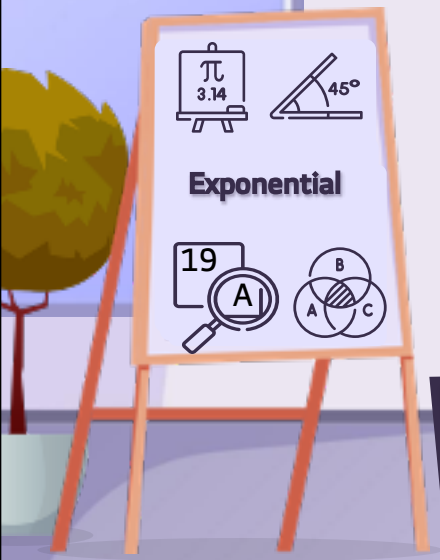

A — Value of A is greater

B — Value of B is greater

C — The two values are equal

D — The given information is not sufficient

Value of A	Value of B
60^2	$(36\times60)+(24\times60)$

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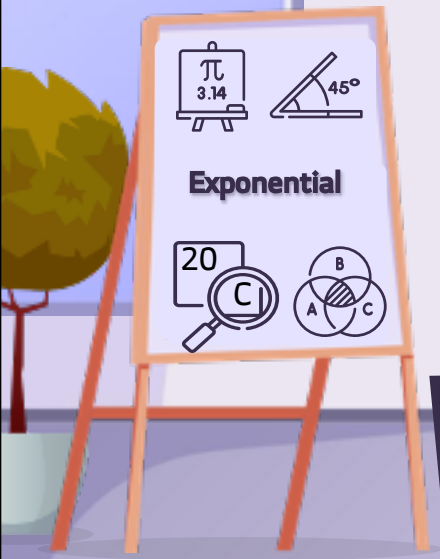
A — B — C — D

Value of A is greater

Value of B is greater

The two values are equal

The given information is not sufficient



Value of A	Value of B
1	$(1.3)^{-1}$

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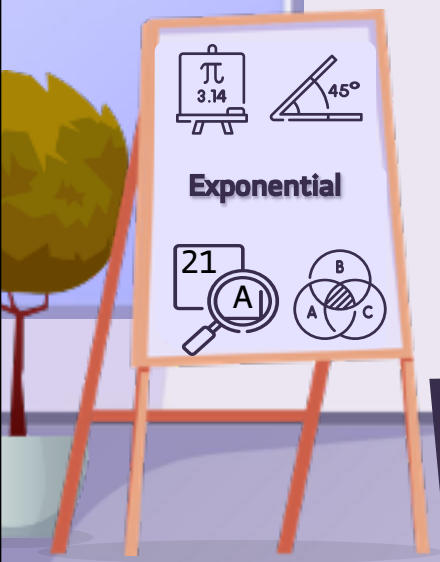

A — Value of A is greater

B — Value of B is greater

C — The two values are equal

D — The given information is not sufficient

Value of A	Value of B
1	$(0.3)^{-1}$

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Exponential

A — B — C — D

Value of A is greater

Value of B is greater

The two values are equal

The given information is not sufficient

Value of A	Value of B
Zero	$x^2 + 2x + 1$

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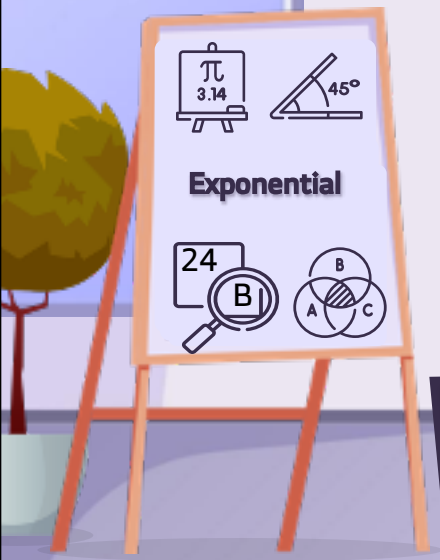
A ⟶ B ⟶ C ⟶ D

Value of A is greater

Value of B is greater

The two values are equal

The given information is not sufficient



Value of A	Value of B
$(x+1)^2(x-1)^2$	-1

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A ⟶ B ⟶ C ⟶ D

A	B	C	D
Value of A is greater	Value of B is greater	The two values are equal	The given information is not sufficient