

POWERS REVIEW

1 Complete the chart

Power	3^2	4^3	5^4	6^5	8^7	9^{10}	10^{11}	15^{20}
Base								
Exponent								

2 Write as a power next products.

$$8 \times 8 \times 8 =$$

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

$$9 \times 9 \times 9 \times 9 \times 9 =$$

$$15 \times 15 \times 15 \times 15 \times 15 =$$

$$8 \times 8 \times 7 \times 7 \times 7 =$$

$$5 \times 5 \times 5 \times 6 \times 6 =$$

$$7 \times 7 \times 9 \times 9 \times 9 =$$

$$10 \times 10 \times 10 \times 8 \times 8 \times 8 =$$

3 Find out how much are these powers.

$$7^1 =$$

$$8^0 =$$

$$9^2 =$$

$$8^3 =$$

$$11^0 =$$

$$25^1 =$$

$$2^2 \times 3^3 =$$

$$2^3 \times 3^2 =$$

$$4^2 \times 5^2 =$$

$$4^2 \times 5^2 \times 3^0 =$$

$$5^3 \times 2^2 \times 3^3 =$$

$$6^2 \times 3^3 \times 7^0 =$$

BASE 10 POWERS

Examples:

$$10^2 = 10 \times 10 = 100$$

$$10^3 = 10 \times 10 \times 10 = 1.000$$

$$10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100.000$$

$$120.000.000 = 12 \times 10.000.000 = 12 \times 10^7$$

$$200.000.000 = 2 \times 100.000.000 = 2 \times 10^8$$

1

Calculate:

$10^4 =$

$10^6 =$

$10^7 =$

$10^8 =$

$10^9 =$

$10^{10} =$

$10^{11} =$

$10^{12} =$

2

Write in scientific notation.

$3.000 =$

$40.000 =$

$600.000 =$

$7.000.000 =$

$80.000.000 =$

$130.000.000 =$

$200.000.000 =$

$320.000.000 =$

$1.000.000.000 =$

$2.000.000.000 =$

3

In this chart appears the average distance from Sun to some planets. Write them in scientific notation.

	Earth	Uranus	Neptune	Pluto
Distance in km	149.500.000	2.873.000.000	4.498.000.000	5.910.000.000
Scientific notation				

PRODUCT OF POWERS WITH THE SAME BASE

Examples:

$$2^3 \times 2^2 \times 2^4 = 2^{3+2+4} = 2^9$$

$$4^3 \times 4^2 \times 4^6 = 4^{3+2+6} = 4^{11}$$

1

Write as only one power. Then calculate its value.

$$2^2 \times 2^2 = 2^4 = 16$$

$$2^2 \times 2^3 =$$

$$2^3 \times 2 =$$

$$2^4 \times 2 =$$

$$3^2 \times 3^2 =$$

$$3^3 \times 3 =$$

$$3^2 \times 3^3 =$$

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

$$3^4 \times 3 =$$

$$4^3 \times 4^0 =$$

$$2^2 \times 2 \times 2^3 =$$

$$3 \times 3^2 \times 3 =$$

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

$$5 \times 5 \times 5^2 =$$

$$6^2 \times 6^2 \times 6 =$$

$$7^2 \times 7 \times 7 =$$

$$8^2 \times 8 \times 8^3 =$$

$$9^2 \times 9^2 \times 9 =$$

$$9 \times 9^2 \times 9^0 =$$

$$10 \times 10^0 \times 10^2 =$$

2

Complete the gaps:

$$2^6 \times 2 \square = 2^8$$

$$2^3 \times 2 \square = 2^7$$

$$6^4 \times 6 \square = 6^{10}$$

$$7^3 \times 7 \square = 7^{11}$$

$$8^4 \times 8 \square = 8^{12}$$

$$9^5 \times 9 \square = 9^{13}$$

$$10^8 \times 10 \square = 10^{14}$$

$$11^9 \times 11 \square = 11^{15}$$

$$12^3 \times 12^4 \times 12 \square = 12^{10}$$

$$14^5 \times 14^6 \times 14 \square = 14^{18}$$

$$15^7 \times 15^2 \times 15 \square = 15^{13}$$

$$23^8 \times 23^9 \times 23 \square = 23^{20}$$

$$35^7 \times 35^6 \times 35 \square = 35^{24}$$

$$42^9 \times 42^5 \times 42 \square = 42^{19}$$

$$53^7 \times 53^4 \times 53 \square = 53^{22}$$

$$61^5 \times 61^2 \times 61 \square = 61^{19}$$

$$75^6 \times 75^2 \times 75 \square = 75^{20}$$

$$81^7 \times 81^2 \times 81 \square = 81^{15}$$

DIVISION OF POWERS WITH THE SAME BASE

Examples:

$$2^6 : 2^3 = 2^{6-3} = 2^3$$

$$4^8 : 4^2 = 4^{8-2} = 4^6$$

1

Write as only one power. Then calculate its value.

$$3^8 : 3^5 = 3^3 = 27$$

$$5^4 : 5^3 =$$

$$6^9 : 6^7 =$$

$$7^{10} : 7^8 =$$

$$8^{12} : 8^{10} =$$

$$9^{13} : 9^{11} =$$

$$10^3 : 10 =$$

$$11^2 : 11^2 =$$

$$12^3 : 12 =$$

$$13^4 : 13^2 =$$

$$20^5 : 20^2 =$$

$$30^6 : 30^3 =$$

$$40^7 : 40^4 =$$

$$50^3 : 50^2 =$$

$$60^3 : 60^0 =$$

$$70^4 : 70^0 =$$

$$80^5 : 80 =$$

$$90^6 : 90^2 =$$

$$100^7 : 100 =$$

$$200^5 : 100^0 =$$

2

Fill in the blanks:

$$4^8 : 4 \square = 4^6$$

$$5^9 : 5 \square = 5^4$$

$$7^8 : 7 \square = 7^6$$

$$8^9 : 8 \square = 8^3$$

$$9^{10} : 9 \square = 9^7$$

$$10^{16} : 10 \square = 10^{10}$$

$$11^{15} : 11 \square = 11^4$$

$$12^{16} : 12 \square = 12^{12}$$

$$13^{12} : 13 \square = 13^9$$

$$35^{15} : 35 \square = 35^{12}$$

$$41^{20} : 41 \square = 41$$

$$50^{18} : 50 \square = 50^9$$

$$62^{17} : 62 \square = 62^4$$

$$75^{19} : 75 \square = 75^2$$

$$80^{21} : 80 \square = 80^{10}$$

$$82^{30} : 82 \square = 82^{21}$$

$$90^{45} : 90 \square = 90^{20}$$

$$95^{32} : 95 \square = 95^{17}$$

POWER OF A POWER

Examples:

$$(2^3)^2 = 2^{3 \times 2} = 2^6$$

$$(4^4)^3 = 4^{4 \times 3} = 4^{12}$$

1

Write as only one power.

$$(3^2)^3 =$$

$$(4^3)^2 =$$

$$(5^2)^2 =$$

$$(6^4)^3 =$$

$$(7^5)^2 =$$

$$(8^4)^5 =$$

$$(9^7)^3 =$$

$$(10^4)^2 =$$

$$(11^5)^6 =$$

$$(12^7)^9 =$$

$$(23^4)^5 =$$

$$(30^5)^6 =$$

$$(41^4)^7 =$$

$$(50^6)^4 =$$

$$(65^3)^5 =$$

$$(72^7)^3 =$$

$$(80^2)^4 =$$

$$(85^3)^2 =$$

$$(97^3)^4 =$$

$$(99^2)^6 =$$

2

Fill in the gaps.

$$(2^4) \square = 2^8$$

$$(3^2) \square = 3^6$$

$$(4^3) \square = 4^{12}$$

$$(5^4) \square = 5^{16}$$

$$(6^8) \square = 6^{24}$$

$$(7^4) \square = 7^{36}$$

$$(8^9) \square = 8^{18}$$

$$(9^5) \square = 9^{30}$$

$$(10^3) \square = 10^{18}$$

$$(23^5) \square = 23^{20}$$

$$(30^7) \square = 30^{21}$$

$$(42^6) \square = 42^{18}$$

$$(50^7) \square = 50^{42}$$

$$(65^3) \square = 65^{24}$$

$$(72^4) \square = 72^{16}$$

$$(75^3) \square = 75^{15}$$

$$(84^2) \square = 84^{20}$$

$$(89^3) \square = 89^{21}$$

POWER OF A PRODUCT OR A DIVISION

Examples:

$$(5 \times 3)^2 = 5^2 \times 3^2$$

$$(4 \times 2 \times 5)^3 = 4^3 \times 2^3 \times 5^3$$

$$(16 : 2)^3 = 16^3 : 2^3$$

$$15^6 : 5^6 = (15 : 5)^6 = 3^6$$

1

Write as a product of powers:

$$(2 \times 3)^3 =$$

$$(4 \times 2)^2 =$$

$$(3 \times 5)^4 =$$

$$(5 \times 7)^3 =$$

$$(8 \times 9)^5 =$$

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

$$(2 \times 3 \times 4)^2 =$$

$$(4 \times 5 \times 6)^3 =$$

$$(6 \times 7 \times 8)^4 =$$

$$(8 \times 9 \times 10)^5 =$$

$$(10 \times 11 \times 12)^6 =$$

$$(13 \times 14 \times 15)^7 =$$

2

Write with only one power.

$$2^2 \times 3^2 \times 4^2 = (2 \times 3 \times 4)^2$$

$$3^3 \times 4^3 \times 5^3 =$$

$$5^6 \times 7^6 \times 8^6 =$$

$$4^7 \times 9^7 \times 5^7 =$$

$$9^{10} \times 8^{10} \times 7^{10} =$$

$$11^7 \times 12^7 \times 13^7 =$$

$$14^8 \times 15^8 \times 16^8 =$$

$$21^7 \times 20^7 \times 19^7 =$$

$$32^9 \times 40^9 \times 53^9 =$$

$$43^8 \times 52^8 \times 62^8 =$$

3

Write with only one power.

$$36^5 : 4^5 =$$

$$45^3 : 9^3 =$$

$$16^7 : 4^7 =$$

$$68^9 : 17^9 =$$

$$48^5 : 5^5 =$$

$$39^{24} : 3^{24} =$$

$$55^3 : 11^3 =$$

$$96^4 : 6^4 =$$

$$75^5 : 15^5 =$$