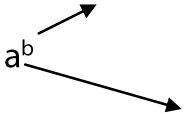
# Exponents

Name:

Answer the following questions in your class workbook:

1. Fill in the labels for this diagram:




2. What is the exponent in each of these powers?

| | | | | | |
|---|---|---|---|---|---|
| a) | $4^3$ | b) | $a^8$ | c) | $40^5$ |
| d) | $3^7$ | e) | $w^y$ | | |

3. What is the base in of these powers?

| | | | | | |
|---|---|---|---|---|---|
| a) | $6^5$ | b) | $5^4$ | c) | $3^2$ |
| d) | $4^1$ | e) | $2^3$ | | |

4. What is the value of each of these?

| | | | | | |
|---|---|---|---|---|---|
| a) | $3^3$ | b) | $2^2$ | c) | $6^2$ |
| d) | $1^2$ | e) | $8^2$ | f) | $9^2$ |
| g) | $5^3$ | h) | $4^3$ | i) | $10^2$ |
| j) | $7^2$ | k) | $11^2$ | l) | $3^2$ |
| m) | $4^2$ | n) | $1^3$ | o) | $12^2$ |
| p) | $8^1$ | q) | $4^1$ | r) | $5^2$ |
| s) | $6^3$ | t) | $2^3$ | u) | $5^1$ |

5. Write out what these exponents mean. The first one has been done to help you.

| | | | | | |
|---|---|---|---|---|---|
| a) | $b^3 = b \times b \times b$ | b) | $5^1$ | c) | $6^7$ |
| d) | $4^5$ | e) | $9^8$ | f) | $3^6$ |

# Exponents (2)

6. Write these numbers in exponential form. The first one has been done to help you:

a) 50 x 50 x 50 x 50 = $50^4$ b) 14 x 14 x 14 x 14 x 14 x 14 x 14

c) 97 x 97 x 97 d) 7 x 7 x 7 x 7 x 7

e) 12 x 12 x 12 x 12 x 12 x 12 f) 8 x 8 x 8 x 8 x 8 x 8 x 8 x 8 x 8

7. Match the columns by finding the opposites: For example: $4^2 = 16$ and $\sqrt{16} = 4$ so $4^2$ is the opposite of $\sqrt{16}$

| Column A | Column B |
|---|---|
| a) $\sqrt{4}$ | 1) $9^2$ |
| b) $5^2$ | 2) $2^2$ |
| c) $\sqrt{100}$ | 3) $\sqrt{9}$ |
| d) $8^2$ | 4) $\sqrt{49}$ |
| e) $4^3$ | 5) $5^3$ |
| f) $\sqrt[3]{125}$ | 6) $10^2$ |
| g) $\sqrt{36}$ | 7) $\sqrt{64}$ |
| h) $3^2$ | 8) $\sqrt[3]{64}$ |
| i) $\sqrt{81}$ | 9) $6^2$ |
| j) $7^2$ | 10) $\sqrt{25}$ |

8. Find the answers for each of the sums below. Show all you steps:

a) $(2+3)^2$ b) $\sqrt{9+16}$ c) $(4+10)^1$

d) $\sqrt[3]{8+56}$ e) $(7-4)^3$ f) $(4+5)^2 - (3-1)^3$

g) $\sqrt{(4+5)^2}$ h) $(10-4)^3 - (8-2)^2$ i) $\sqrt{5+4} - (8-9)^3$

j) $\sqrt[3]{100+25}$ k) $(3 \times 2)^2 - (9-6)^3$ l) $\sqrt{7 \times 8 - 4 \times 5}$

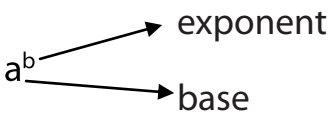
Remember:
Any number to the power of one is that same number.

# Exponents: Answer Sheet

Name:

Answer the following questions in your book class workbook:

1. Fill in the labels for this diagram:




2. What is the exponent in each of these powers?

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| a) | $4^3$ | 3 | b) | $a^8$ | 8 | c) | $40^5$ | 5 |
| d) | $3^7$ | 7 | e) | $w^y$ | y | | | |

3. What is the base in of these powers?

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| a) | $6^5$ | 6 | b) | $5^4$ | 5 | c) | $3^2$ | 3 |
| d) | $4^1$ | 4 | e) | $2^3$ | 2 | | | |

4. What is the value of each of these?

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| a) | $3^3$ | 27 | b) | $2^2$ | 4 | c) | $6^2$ | 36 |
| d) | $1^2$ | 1 | e) | $8^2$ | 64 | f) | $9^2$ | 81 |
| g) | $5^3$ | 125 | h) | $4^3$ | 64 | i) | $10^2$ | 100 |
| j) | $7^2$ | 49 | k) | $11^2$ | 121 | l) | $3^2$ | 9 |
| m) | $4^2$ | 16 | n) | $1^3$ | 1 | o) | $12^2$ | 144 |
| p) | $8^1$ | 8 | q) | $4^1$ | 4 | r) | $5^2$ | 25 |
| s) | $6^3$ | 216 | t) | $2^3$ | 8 | u) | $5^1$ | 5 |

5. Write out what these exponents mean. The first one has been done to help you

| | | | | | |
|---|---|---|---|---|---|
| a) | $b^3$ | $= b \times b \times b$ | b) | $5^1$ | $= 5$ |
| c) | $6^7$ | $= 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ | d) | $4^5$ | $= 4 \times 4 \times 4 \times 4 \times 4$ |
| e) | $9^8$ | $= 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9$ | f) | $3^6$ | $= 3 \times 3 \times 3 \times 3 \times 3 \times 3$ |

# Exponents (2): Answer Sheet

6. Write these numbers in exponential form. The first one has been done to help you:

a) $50 \times 50 \times 50 \times 50 = \underline{50^4}$ b) $14 \times 14 \times 14 \times 14 \times 14 \times 14 \times 14 = \underline{14^7}$

c) $97 \times 97 \times 97 = \underline{97^3}$ d) $7 \times 7 \times 7 \times 7 \times 7 = \underline{7^5}$

e) $12 \times 12 \times 12 \times 12 \times 12 \times 12 = \underline{12^6}$

f) $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 = \underline{8^9}$

7. Match the columns by finding the opposites: For example: $4^2 = 16$ and $\sqrt{16} = 4$ so $4^2$ is the opposite of $\sqrt{16}$

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| a) | 2 | b) | 10 | c) | 6 | d) | 7 | e) | 8 |
| f) | 5 | g) | 9 | h) | 3 | i) | 1 | j) | 4 |

8. Find the answers for each of the sums below. Show all you steps:

a) $(2+3)^2$

$= 5^2$

$= 25$

b) $\sqrt{9+16}$

$= \sqrt{25}$

$= 5$

c) $(4+10)^1$

$= 14^1$

$= 14$

d) $\sqrt[3]{8+56}$

$= \sqrt[3]{64}$

$= 4$

e) $(7-4)^3$

$= 3^3$

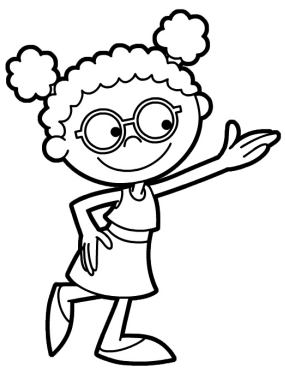
$= 27$

f) $(4+5)^2 - (3-1)^3$

$= 9^2 - 2^3$

$= 81 - 8$

$= 73$



# Exponents (3): Answer Sheet



g) $\sqrt{(4+5)^2}$

$= \sqrt{9^2}$

$= \sqrt{81}$

$= 9$

h) $(10-4)^3 - (8-2)^2$

$= 6^3 - 6^2$

$= 216 - 36$

$= 180$

i) $\sqrt{5+4} - (8-9)^3$

$= \sqrt{9} - 1^3$

$= 3 - 1$

$= 2$

j) $\sqrt[3]{100+25}$

$= \sqrt[3]{125}$

$= 5$

k) $(3 \times 2)^2 - (9-6)^3$

$= 6^2 - 3^3$

$= 36 - 27$

$= 9$

l) $\sqrt{7 \times 8 - 4 \times 5}$

$= \sqrt{56 - 20}$

$= \sqrt{36}$

$= 6$