

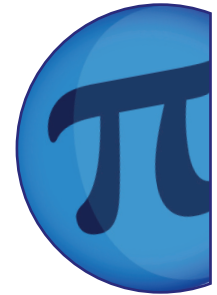


# Binary: The Alien Language

NAME: .....

CLASS: .....

DATE: .....



## Basic/Core

1) Calculate the following powers of 2:

a)  $0^2$

b)  $1^2$

c)  $2^2$

d)  $3^2$

e)  $4^2$

f)  $5^2$

g)  $6^2$

h)  $7^2$

i)  $8^2$

j)  $9^2$

2) Using the table of powers of 2, convert the following binary numbers to base 10 numbers:

128	64	32	16	8	4	2	1
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a) 11

b) 101

c) 1110

d) 10101

e) 10001

f) 10011

g) 11001

h) 111010

i) 1111010

j) 10000001

3) Convert the following base 10 numbers to binary numbers:

a) 9

b) 13

c) 40

d) 67

e) 100

f) 101

g) 127

h) 140

i) 200

j) 250



# Binary: The Alien Language

## Basic/Core

4) Express the following ratios in their simplest form:

a) 36:40

b) 6mm:3cm

c) 2.5m:6m

5) Express the following ratios in the form 1:n.

a) 3:18

b) 4:10

c) 4:31

d) 4:15

6) The dimensions of a room are length 12m and width 8m. What is the ratio of

a) its length to its width?

b) its width to its length?

7) Express the following scales as a ratio:

a) 1cm = 1km

b) 1cm = 5km

c) 2cm = 5km

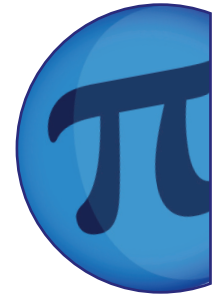


# Binary: The Alien Language

NAME: .....

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## Advanced

1) Convert the following binary numbers to base 10 numbers:

a) 11                      b) 101                      c) 1110                      d) 10101                      e) 10001

f) 10011                      g) 11001                      h) 111010                      i) 1111010                      j) 10000001

2) Convert the following base 10 numbers to binary numbers:

a) 9                      b) 13                      c) 40                      d) 67                      e) 100

f) 101                      g) 127                      h) 140                      i) 200                      j) 250

3) Express the following ratios in the form 1:n.

a) 3:18                      b) 4:10                      c) 4:31                      d) 4:15



# Binary: The Alien Language

## Advanced

4) The dimensions of a room are length 12m and width 8m. What is the ratio of

a) its length to its width?

b) its width to its length?

5) Express the following scales as a ratio:

a) 1cm = 1km

b) 1cm = 5km

c) 2cm = 5km

6) A soldier measures the bearing to Camp Alpha, 120km away, as  $060^\circ$ . He then takes a bearing on Camp Bravo, 100km away, and measures it as  $165^\circ$ . By making an accurate scale drawing, determine how far apart the two camps are.



# Binary: The Alien Language

## ANSWERS

### Basic/Core

- |                          |                       |                          |                           |                           |
|--------------------------|-----------------------|--------------------------|---------------------------|---------------------------|
| 1) a) 1<br>f) 32         | b) 2<br>g) 64         | c) 4<br>h) 128           | d) 8<br>i) 256            | e) 16<br>j) 512           |
| 2) a) 3<br>f) 19         | b) 5<br>g) 25         | c) 14<br>h) 58           | d) 21<br>i) 122           | e) 17<br>j) 129           |
| 3) a) 1001<br>f) 1100101 | b) 1101<br>g) 1111111 | c) 101000<br>h) 10001100 | d) 1000011<br>i) 11001000 | e) 1100100<br>j) 11111010 |
| 4) a) 9:10               | b) 1:5                | c) 5:12                  |                           |                           |
| 5) a) 1:6                | b) 1:2.5              | c) 1:7.75                | d) 1:3.75                 |                           |
| 6) a) 3:2                | b) 2:3                |                          |                           |                           |
| 7) a) 1:100,000          | b) 1:500,000          | c) 1:250,000             |                           |                           |

### Advanced

- |                          |                       |                          |                           |                           |
|--------------------------|-----------------------|--------------------------|---------------------------|---------------------------|
| 1) a) 3<br>f) 19         | b) 5<br>g) 25         | c) 14<br>h) 58           | d) 21<br>i) 122           | e) 17<br>j) 129           |
| 2) a) 1001<br>f) 1100101 | b) 1101<br>g) 1111111 | c) 101000<br>h) 10001100 | d) 1000011<br>i) 11001000 | e) 1100100<br>j) 11111010 |
| 3) a) 1:6                | b) 1:2.5              | c) 1:7.75                | d) 1:3.75                 |                           |
| 4) a) 3:2                | b) 2:3                |                          |                           |                           |
| 5) a) 1:100,000          | b) 1:500,000          | c) 1:250,000             |                           |                           |
| 6) 175km                 |                       |                          |                           |                           |