

# Revision & Practice Worksheet 19

## A Number applications: Scientific notation

Write the following numbers using scientific notation:

- |                  |                  |                      |
|------------------|------------------|----------------------|
| 1 6 030 000      | 2 5 800 000      | 3 69 000 000         |
| 4 48 000 000     | 5 168 000 000    | 6 71 800 000         |
| 7 0.000 001 3    | 8 0.000 000 14   | 9 0.000 000 58       |
| 10 0.000 000 486 | 11 0.000 004 013 | 12 0.000 000 008 301 |

Write the following as whole numbers:

- |                           |                           |                           |
|---------------------------|---------------------------|---------------------------|
| 13 $6.023 \times 10^{10}$ | 14 $5.09 \times 10^7$     | 15 $6.03 \times 10^6$     |
| 16 $5.09 \times 10^6$     | 17 $3.12 \times 10^5$     | 18 $9.08 \times 10^7$     |
| 19 $3.01 \times 10^{-4}$  | 20 $6.09 \times 10^{-3}$  | 21 $3.149 \times 10^{-5}$ |
| 22 $7.093 \times 10^{-5}$ | 23 $2.013 \times 10^{-4}$ | 24 $6.134 \times 10^{-6}$ |

## B Number applications: Estimation

Estimate whole number solutions to:

- |                                      |  |                             |
|--------------------------------------|--|-----------------------------|
| 1 $9.87 \times 3.75$                 | 2 $5.07 \times 2.98$                   | 3 $3.9 + 6.2 + 7.09$        |
| 4 $5.87 + 3.21 + 12.09$              | 5 $6.9 - 3.0123$                       | 6 $8.01 - 6.9593$           |
| 7 $2\frac{1}{4} \times 9\frac{1}{8}$ | 8 $10\frac{5}{8} \times 11\frac{1}{8}$ | 9 $11\frac{7}{8} \div 2.98$ |

## C Cartesian plane: Shifting parabolas

For each of the following, draw up a set of axes with a sketch of the curve  $y = x^2$ . Show and describe how each of the curves has been shifted, showing important points:

- |                                     |                                 |  |
|-------------------------------------|---------------------------------|--|
| 1 $y = x^2$<br>$y = \frac{1}{2}x^2$ | 2 $y = x^2$<br>$y = -x^2$       | 3 $y = x^2$<br>$y = -3x^2$                 |
| 4 $y = x^2$<br>$y = x^2 + 4$        | 5 $y = x^2$<br>$y = x^2 - 5$    | 6 $y = x^2$<br>$y = (x + 1)^2$             |
| 7 $y = x^2$<br>$y = (x - 2)^2$      | 8 $y = x^2$<br>$y = 2(x + 1)^2$ | 9 $y = x^2$<br>$y = -\frac{1}{2}(x - 1)^2$ |
| 10 $y = x^2$<br>$y = (x + 3)^2 + 2$ |                                 |  |

## D Cartesian plane: Plotting straight lines

Complete the table of values for the following equations and use the results to plot each line on a set of axes. The axes need to have  $x$ -values going from  $-2$  to  $+2$  by ones and the  $y$ -values need to go from  $-7$  to  $+10$ .

1  $y = x + 3$

$x$	$-2$	$-1$	$0$	$1$	$2$
$y$					

2  $y = 3 - x$

$x$	$-2$	$-1$	$0$	$1$	$2$
$y$					

3  $y = 3x$

$x$	$-0$	$-1$	$0$	$1$	$2$
$y$					

## E Cartesian plane: Sketching straight lines

For each of the following lines, find the  $x$ -intercept,  $y$ -intercept and a check point to sketch the position of the lines on a set of axes so that the  $x$ -values go from  $-3$  to  $+3$  and the  $y$ -values go from  $-5$  to  $8$ .

1  $y = x + 3$

2  $y = 3 - x$

3  $y = 3x$

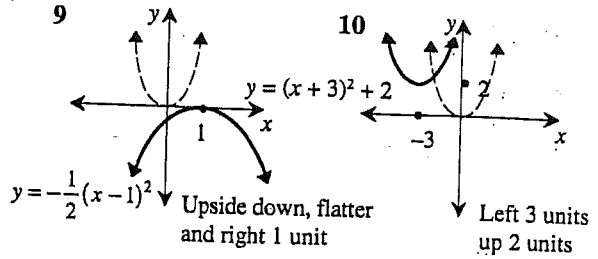
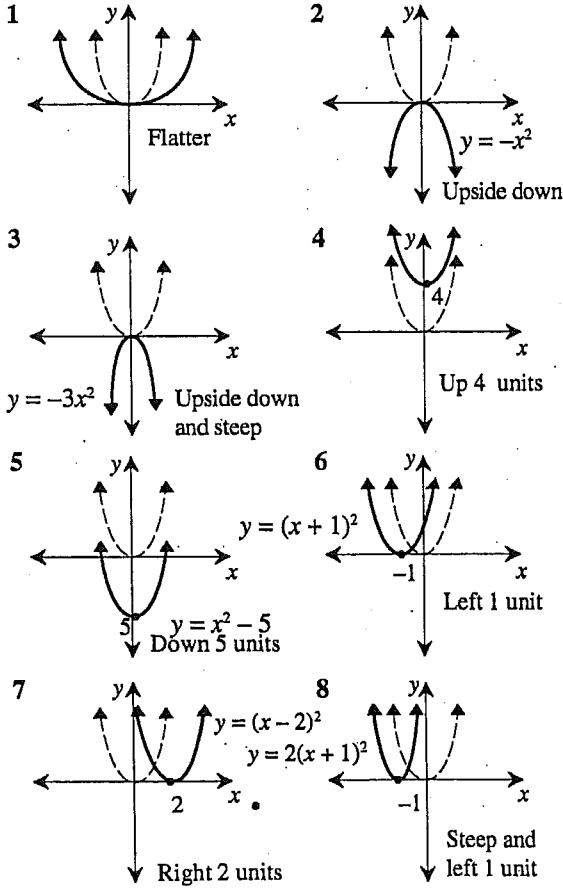
Note that the lines you sketch in set E should be the same as the lines you plotted in set D.

# Worksheet 19

- A 1  $6.03 \times 10^6$       2  $5.8 \times 10^6$   
 3  $6.9 \times 10^7$       4  $4.8 \times 10^7$   
 5  $1.68 \times 10^8$       6  $7.18 \times 10^7$   
 7  $1.3 \times 10^{-6}$       8  $1.4 \times 10^{-7}$   
 9  $5.8 \times 10^{-7}$       10  $4.86 \times 10^{-7}$   
 11  $4.013 \times 10^{-6}$       12  $8.301 \times 10^{-9}$   
 13 60 230 000 000      14 50 900 000  
 15 6 030 000      16 5 090 000  
 17 312 000      18 90 800 000  
 19 0.000 301      20 0.006 09       $y = x^2 + 4$   
 21 0.000 031 49      22 0.000 070 93  
 23 0.000 201 3      24 0.000 006 134

- B 1 40      2 15      3 17      4 21      5 4  
 6 1      7 18      8 121      9 4

C Dotted line is in each case  $y = x^2$



D 1  $y = x + 3$

x	-2	-1	0	1	2
y	1	2	3	4	5

2  $y = 3 - x$

x	-2	-1	0	1	2
y	5	4	3	2	1

3  $y = 3x$

x	-2	-1	0	1	2
y	-6	-3	0	3	6

E 1  $y = x + 3$

y-int. = 3 → (0, 3)

x-int. = -3 → (-3, 0)

Check point:

Choose  $x = 1$

$y = 4$

(1, 4)

2  $y = 3 - x$

y-int. = 3 → (0, 3)

x-int. = 3 → (3, 0)

Check point:

Choose  $x = 1$

$y = 2$

(1, 2)

3  $y = 3x$

y-int. = 0 → (0, 0)

x-int. = 0 → (0, 0)

Check point:

Choose  $x = 1$

$y = 3$

(1, 3)

