Write positive integers in the form $A \times 10^n$

H

1 Complete the statements and then continue the pattern.

a) $30 = 3 \times \boxed{10}$

b) $300 = 3 \times 10 \times \boxed{10} = 3 \times 10^{\boxed{2}}$

c) $3,000 = 3 \times 10 \times 10 \times \boxed{10} = 3 \times 10^{\boxed{3}}$

d) $30,000 = \underline{3 \times 10 \times 10 \times 10 \times 10 = 3 \times 10^4}$

e) $300,000 = \underline{3 \times 10 \times 10 \times 10 \times 10 \times 10 = 3 \times 10^5}$

f) $3,000,000 = \underline{3 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 3 \times 10^6}$

2 Sort these values into the correct columns of the table.

7×10^6 $50,000$ 8×10^3

15×10^8 6×10 5×8^{10}

Numbers written in standard form	Numbers not written in standard form
7×10^6	15×10^8
8×10^3	$50,000$
6×10	5×8^{10}

Write two more numbers in each column.

3 Find the missing number so that these numbers are written in standard form.

a) $800 = \boxed{8} \times 10^2$

b) $7,000,000 = \boxed{7} \times 10^6$

c) $20 = \boxed{2} \times 10$

d) five million $= \boxed{5} \times 10^6$

4 Write the missing power so that these numbers are written in standard form.

a) $5,000 = 5 \times 10^{\boxed{3}}$

b) $100,000 = 1 \times 10^{\boxed{5}}$

c) $4,000,000,000 = 4 \times 10^{\boxed{9}}$

d) Seven billion $= 7 \times 10^{\boxed{9}}$

5 Write these as ordinary numbers.

a) $8 \times 10^6 = \underline{8,000,000}$

b) $1 \times 10^8 = \underline{100,000,000}$

c) $9 \times 10^5 = \underline{900,000}$

6 Write these numbers in standard form.

a) $900 = \underline{9 \times 10^2}$

b) $30,000,000 = \underline{3 \times 10^7}$

c) $60 = \underline{6 \times 10}$

d) fifty thousand $= \underline{5 \times 10^4}$

e) $40,000 \times 10 = \underline{4 \times 10^5}$

f) $1,000 \times 7,000 = \underline{7 \times 10^6}$

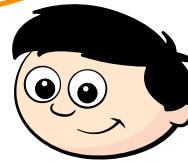**g)** $200 \times 300 = \underline{6 \times 10^4}$

7

(Eva) 4 x 10^7 is smaller than 6 x 10^5 because 4 is smaller than 6
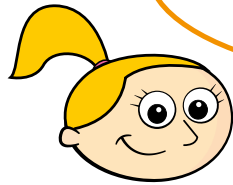
(Dexter) I don't think you are correct. I think the powers are important.

Eva

Dexter

Who is correct? _Dexter_

Explain your answer.

$4 \times 10^7 = 40,000,000$ $6 \times 10^5 = 600,000$

$4 \times 10^7 > 6 \times 10^5$

8 Circle the greatest number.

(4 × 10^6)   7 × 10^4

Explain your answer.

4,000,000 > 70,000

9 Find the range of these numbers.

3 × 10^5 7 × 10^4 8 × 10^2 7 × 10^5

699,200

10 The table shows information about planets.

| | Radius (in metres) | | Mass (in kg) |
	Standard form	Ordinary form	Standard form
Mercury	2 × 10^6	2,000,000	3 × 10^{23}
Venus	6×10^6	6000000	5 × 10^{24}
Earth	7 × 10^6	7,000,000	6 × 10^{24}
Mars	3 ×10^6	3000000	6 × 10^{23}
Jupiter	7 × 10^7	70,000,000	2 × 10^{27}
Saturn	6 × 10^7	60,000,000	6 × 10^{26}
Uranus	3×10^7	30000000	9 × 10^{25}
Neptune	2 × 10^7	20,000,000	1 × 10^{22}

a) Complete the table.

b) Which planet has the greatest radius?

   Jupiter

c) Write the names of the planets in ascending order based on their mass.

   Neptune, Mercury, Mars, Venus, Earth, Uranus, Saturn, Jupiter

d) Each of the numbers in the table has been rounded to 1 significant figure.

   What is the smallest possible radius of Saturn?

   55,000,000 m