Ex   A and B are similar figures

A has volume 439 cm^3, B has volume 750 cm^3

i   A length in A is 15cm, find corresponding length in B

ii   An area on B is 95 cm^2, find corresponding area on A.

	A		B
Vol	439	:	750
	1	:	$\dfrac{750}{439}$
Length	1	:	$\sqrt[3]{\dfrac{750}{439}}$ 1.1955
Area	1	:	1.1955^2 1.4291

i)   Length in B $= 15 \times 1.1955 = 17.93 \text{ cm}$

ii)   Area in A $= 95 \div 1.4291 = 66.48 \text{ cm}^2$

Exercise   C and D similar

Surface Areas   C $= 394 \text{ cm}^2$ D $= 116 \text{ cm}^2$

A length on C $= 23$cm, find corresponding length on D

A volume on D $= 500 \text{ cm}^3$, find corresponding volume on C

	C		D
Area	394	:	116
	$\dfrac{394}{116}$	:	1
Length	$\sqrt{\dfrac{394}{116}}$	:	1
	1.84297	:	1
Vol	1.84297^3	:	1
	6.25976	:	1

Length   C = 23cm   D = 23 ÷ 1.84297
                            = 12.48 cm

Vol   D = 500cm³   C = 500 × 6.25976
                            = 3130 cm³

	Sin	cos	tan
0°	0	1	0
30°	$\dfrac{1}{2}$	$\dfrac{\sqrt{3}}{2}$	$\dfrac{1}{\sqrt{3}}$
45°	$\dfrac{1}{\sqrt{2}}$	$\dfrac{1}{\sqrt{2}}$	1
60°	$\dfrac{\sqrt{3}}{2}$	$\dfrac{1}{2}$	$\dfrac{\sqrt{3}}{1}$
90°	1	0	∞

$\sqrt{2}$ 45 45 1

2 30 2 60 $\sqrt{3}$ 1 1

8cm 30° x
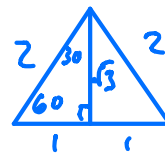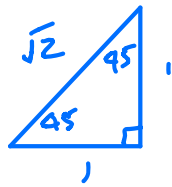
$$\sin 30° = \frac{x}{8}$$

$$8 \sin 30° = x$$

$$8 \times \tfrac{1}{2} = x$$

$$x = 4 \text{ cm}$$

Compound Interest

John invests £630 for 5 years after which he has £883.61p.

What was the annual rate of interest?

$$630 \times M^5 = 883.61$$

$$M^5 = \frac{883.61}{630}$$

$$M = \sqrt[5]{\frac{883.61}{630}} = \left(\frac{883.61}{630}\right)^{\frac{1}{5}}$$

$$= 1.07$$

Interest 7% per annum

Exercise   If £500 doubles in 8 years
What was the annual rate of increase
to the nearest 0.1 of a per cent

$$500 \times M^8 = 1000$$

$$M^8 = \frac{1000}{500} = 2$$

$$M = 2^{\frac{1}{8}} = 1.090507733$$

Rate of annual increase $= 9.1\%$

Exercise

$$(2x + 1)(x - 3)(x + 2)$$

$$= (2x^2 + x - 6x - 3)(x + 2)$$

$$= (2x^2 - 5x - 3)(x + 2)$$

$$= 2x^3 - 5x^2 - 3x$$
$$+ 4x^2 - 10x - 6$$

$$= 2x^3 - x^2 - 13x - 6$$