

on a calculator

$$39\% \text{ of } 82$$

$$0.39 \times 82$$

Change to a decimal and multiply

increasing

Increase £60 by 12%

$$12\% \text{ of } 60 = 0.12 \times 60 = \text{£}7.20$$

$$\text{New amount} = \text{£}60 + \text{£}7.20 = \text{£}67.20$$

ADD

Year 10 Higher work covered from September to October half-term

fraction to %

$$\frac{15}{20} = \frac{75}{100} = 75\%$$

OR

$$15 \div 20 \times 100 = 75\%$$

Percentages

%

decreasing

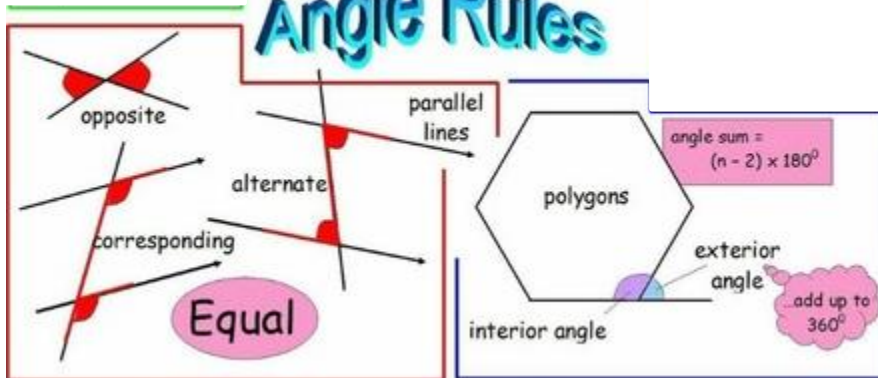
decrease £60 by 12%

$$12\% \text{ of } 60 = 0.12 \times 60 = \text{£}7.20$$

$$\text{New amount} = \text{£}60 - \text{£}7.20 = \text{£}52.80$$

subtract for a decrease in %

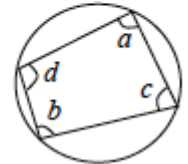
Angle Rules



Opp. \angle s of Cyclic Quadrilateral

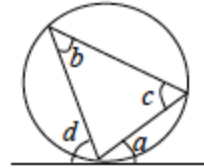
$$\angle a + \angle b = 180^\circ$$

$$\angle c + \angle d = 180^\circ$$



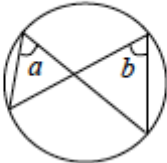
Alternate Segment Theorem

$$\angle a = \angle b, \angle c = \angle d$$



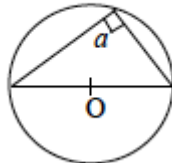
\angle s in Same Segment

$$\angle a = \angle b$$



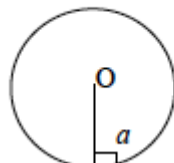
\angle in Semi-Circle

$$\angle a = 90^\circ$$



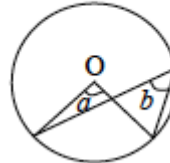
Radius \perp Tangent

$$\angle a = 90^\circ$$



\angle at Centre

$$\angle a = 2\angle b$$



Compound interest

At the end of year 1 Jack has $\text{£}500 \times 1.05 = \text{£}525$
 At the end of year 2 Jack has $\text{£}525 \times 1.05 = \text{£}551.25$
 At the end of year 3 Jack has $\text{£}551.25 \times 1.05 = \text{£}578.81$
 At the end of year 4 Jack has $\text{£}578.81 \times 1.05 = \text{£}607.75$
 (These amounts are written to the nearest penny.)

We can write this in a single calculation as

$$\text{£}500 \times 1.05 \times 1.05 \times 1.05 \times 1.05 = \text{£}607.75$$

Or using index notation as

$$\text{£}500 \times 1.05^4 = \text{£}607.75$$

Reverse percentages

We can also use a unitary method to solve these type of percentage problems. For example,

Christopher's monthly salary after a 5% pay rise is $\text{£}1312.50$. What was his original salary?

The new salary represents 105% of the original salary.

$$105\% \text{ of the original salary} = \text{£}1312.50$$

$$1\% \text{ of the original salary} = \text{£}1312.50 \div 105$$

$$100\% \text{ of the original salary} = \text{£}1312.50 \div 105 \times 100 = \text{£}1250$$

Finding the nth Term for Linear Sequences

5 8 11 14 17...

+3 +3 +3 +3

$$3n + 2$$

+2 because to get from the pattern number of 3 to 5 the first term

Find the quadratic sequence's next 3 terms and the rule for the nth term, $T_n = an^2 + bn + c$.

+4 +4 +4 $\rightarrow 2a = 4 \rightarrow a = 2$

+6 +10 +14 +18 +22 +26 +30

-3 3 13 27 45 67 93 123

1st term, $T_1 = a + b + c = 3$
 $2 + b - 3 = 3$
 $b = 3 - 2 + 3$
 $b = 4$

$$\text{nth term, } T_n = 2n^2 + 4n - 3$$