



SUBJECT: Maths

UNIT: Fractions, Decimals and Percentages

Fractions

$$\frac{5}{8} \times \frac{2}{3}$$

$$\frac{5}{8} \times \frac{2}{3} = \frac{10}{24}$$

Multiply the top
Multiply the bottom

$$\frac{5}{8} \div \frac{2}{3}$$

$$\frac{5}{8} \times \frac{3}{2} = \frac{15}{16}$$

Keep Flip Change
KFC

$$\frac{5}{8} + \frac{2}{3}$$

$$\frac{15}{24} + \frac{16}{24} = \frac{31}{24} = 1\frac{7}{24}$$

Make the
denominator the
same

Reverse Percentage

Using multipliers

a) Find 103% of 50
 $50 \times 1.03 = 51.5$

b) Find 97% of 42
 $42 \times 0.97 = 40.74$

A bag costs £70 in a 20% off sale. How much was the bag at full price?

20% off means there is 80% left

$$80\% = 70 \div 80$$

$$1\% = 0.875 \times 100$$

$$100\% = 87.5$$

A rail ticket increases by 8% to £1200. How much was the rail ticket originally?

8% increase means there is now 108%

$$108\% = 1200 \div 108$$

$$1\% = 11.11... \times 100$$

$$100\% = 1111.12$$

Interest

£400 is invested for 5 years at 2% using simple interest. Calculate how much interest is earned.

$$400 \times 5 \times 0.02 = £40$$

£400 is invested for 5 years at 2% using compound interest. Calculate how much money there will be in 5 years time.

$$400 \times 1.02^5 = £441.63$$

A car costs £12,000 and depreciates at 2% every year. What will the value of the car be in 3 years time?

2% off means there is 98% left after each year

$$12000 \times 0.98 \times 0.98 \times 0.98 = £11294.30$$

Key Words

Recurring	Simple Interest
Compound Interest	Depreciation

SUBJECT: Maths

UNIT: Perimeter, Area, Volume, Surface Area



Circles

Find the area of the circle



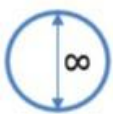
$$\begin{aligned} &= \pi r^2 \\ &= \pi 3^2 \\ &= 9\pi \end{aligned}$$

Find the area of the semi-circle



$$\begin{aligned} &= \pi r^2 \div 2 \\ &= \pi 4^2 \div 2 \\ &= 8\pi \end{aligned}$$

Find the circumference of the circle



$$\begin{aligned} &= \pi d \\ &= 8\pi \end{aligned}$$

Volume

Find the volume of the sphere



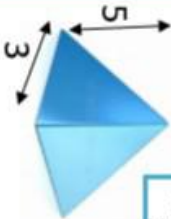
$$\begin{aligned} &= \frac{4}{3} \pi r^3 \\ &= \frac{4}{3} \pi 3^3 \\ &= 36\pi \end{aligned}$$

Find the volume of the cone



$$\begin{aligned} &= \frac{1}{3} \pi r^2 h \\ &= \frac{1}{3} \pi 2^2 3 \\ &= 4\pi \end{aligned}$$

Find the volume of the pyramid



$$\begin{aligned} &= \frac{1}{3} \times \text{base area} \times \text{height} \\ &= \frac{1}{3} \times 5 \times 5 \times 3 \\ &= 25 \end{aligned}$$

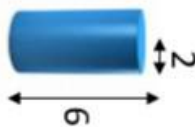
Surface Area

Find the surface area of the cuboid



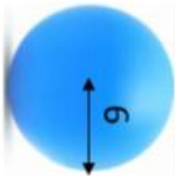
$$\begin{aligned} \text{Top } (5 \times 2) &= 10 \\ \text{Side } (2 \times 3) &= 6 \\ \text{Front } (5 \times 3) &= 15 \\ 10 + 6 + 15 &= 31 \\ 31 \times 2 &= 62 \end{aligned}$$

Find the surface area of the cylinder



$$\begin{aligned} \text{Top } (\pi r^2) &= 4\pi \\ \text{Side} & \text{ (find the circumference = } \\ & \pi \times 4 = 4\pi) \\ & \text{(area = } 4\pi \times 6 = 24\pi) \\ \text{SA} &= 4\pi + 4\pi + 24\pi = 32\pi \end{aligned}$$

Find the surface area of the sphere



$$\begin{aligned} &= 4\pi r^2 \\ &= 4\pi 6^2 \\ &= 144\pi \end{aligned}$$

*Formulae for volume and SA of spheres, volume of cones and volume of pyramids are given in exams