

National 5 Prelim Revision

Fractions

Adding/subtracting:

Q1

a)	$\frac{2}{3} + \frac{1}{4}$	b)	$\frac{4}{5} + \frac{1}{2}$	c)	$\frac{3}{4} + \frac{2}{5}$	d)	$\frac{3}{4} + \frac{1}{8}$
e)	$\frac{1}{2} - \frac{1}{5}$	f)	$\frac{5}{6} - \frac{1}{3}$	g)	$\frac{4}{7} - \frac{1}{2}$	h)	$\frac{4}{5} - \frac{1}{10}$
i)	$2\frac{1}{3} + 1\frac{1}{2}$	j)	$3\frac{2}{5} + 1\frac{1}{3}$	k)	$4\frac{2}{3} + 2\frac{1}{4}$	l)	$5\frac{1}{4} + 2\frac{1}{2}$
m)	$2\frac{1}{3} - 1\frac{5}{6}$	n)	$4\frac{3}{5} - 1\frac{1}{10}$	o)	$4\frac{2}{3} - 3\frac{1}{9}$	p)	$1\frac{2}{3} - 1\frac{2}{5}$

Multiplying/Dividing:

Q2

a)	$\frac{3}{4} \times \frac{1}{5}$	b)	$\frac{3}{5} \times \frac{10}{7}$	c)	$\frac{4}{5} \times \frac{20}{3}$	d)	$\frac{12}{21} \times \frac{7}{4}$
e)	$\frac{15}{16} \times \frac{18}{5}$	f)	$\frac{21}{16} \times \frac{20}{15}$	g)	$\frac{4}{7} \times \frac{14}{20}$	h)	$\frac{6}{7} \times \frac{14}{33}$
i)	$\frac{12}{21} \div \frac{16}{7}$	j)	$\frac{20}{25} \div \frac{5}{4}$	k)	$\frac{9}{10} \div \frac{3}{4}$	l)	$\frac{15}{21} \div \frac{5}{7}$

Mixed Examples:

Q3

a)	$\frac{3}{4} + \frac{5}{6}$	b)	$\frac{7}{8} - \frac{1}{4}$	c)	$\frac{5}{6} \times \frac{9}{10}$	d)	$1\frac{2}{3} + 2\frac{3}{4}$
e)	$3 + \frac{1}{2}$	f)	$4 \div \frac{2}{5}$	g)	$3\frac{1}{2} + 2\frac{3}{4}$	h)	$\frac{12}{35} \times \frac{14}{10}$
i)	$\frac{1}{2} + \frac{1}{3} + \frac{1}{4}$	j)	$\frac{2}{5} + \frac{1}{3} - \frac{1}{2}$	k)	$\frac{3}{4} - \frac{1}{2} + \frac{5}{6}$	l)	$\frac{3}{4} + \frac{1}{2} \times \frac{4}{5}$

Brackets

Q1 Multiply out the brackets and simplify:

a)	$(x + 4)(x + 5)$	b)	$(2x + 4)(3x + 6)$
c)	$(2x - 7)(3x - 5)$	d)	$(3m + 2)(4m - 3)$
e)	$(4p - 3)(3p + 7)$	f)	$(x + 4)(x^2 + 3x + 5)$
g)	$(a + 4)(a^2 + 5a + 1)$	h)	$(2x + 3)(x^2 - 3x + 6)$
i)	$(3m + 2)(2m^2 - 2m + 5)$	j)	$(3x - 1)(2x^2 + 6x - 3)$

Factorising

Q1 Fully factorise the following:

- | | | |
|---------------------|---------------------|--------------------|
| a) $5a + 10$ | b) $6x - 9$ | c) $12m + 15n$ |
| d) $x^2 - 9$ | e) $a^2 - 49$ | f) $100 - b^2$ |
| g) $x^2 + 7x + 6$ | h) $a^2 + 7a + 10$ | i) $m^2 + 9m + 14$ |
| j) $x^2 + x - 12$ | k) $p^2 + 3p - 10$ | l) $w^2 - w - 20$ |
| m) $x^2 + 10x + 25$ | n) $g^2 + 10g - 36$ | o) $x^2 - 6x - 16$ |

Equations

Solve the following equations:

- | | | |
|--------------------------|---------------------------|--------------------------|
| Q1 a) $3(x + 3) = 30$ | b) $4(x - 1) = -24$ | c) $2(x + 1) = -18$ |
| d) $3(x + 1) + 2 = 19$ | e) $2(x + 3) - 1 = 17$ | f) $3 + 2(x + 3) = -11$ |
| g) $3(x + 1) = 2(x + 5)$ | h) $3(x - 1) = 2(x + 5)$ | i) $2(x + 3) = 3(x + 8)$ |
| j) $4(x + 1) = 2(x + 7)$ | k) $5(x - 2) = 3(x + 6)$ | l) $3(x + 2) = 2(x + 5)$ |
| m) $2(x + 2) = 5(x + 3)$ | n) $3(x - 1) = 2(2x + 5)$ | o) $4(x - 2) = 2(x + 7)$ |

Change the subject

Q1 Change the subject of the following to a.

- | | | |
|-----------------|-------------------|------------------|
| a) $3a + b = 7$ | b) $3ab + 2 = 5c$ | c) $5x = 3a - 1$ |
|-----------------|-------------------|------------------|

Q2 Change the subject of the following to x.

- | | | |
|--------------------|--------------------|--------------------|
| a) $2x^2 + 5 = 3y$ | b) $3xyz - 2 = 2a$ | c) $3y = 2 + 5x^2$ |
|--------------------|--------------------|--------------------|

Simultaneous Equations

Q1 Solve the following pairs of equations

(a) $2a + 3b = 19$
 $3a - b = 1$

(b) $5c + 2d = 26$
 $c + d = 7$

(c) $5g - 3h = 16$
 $3g + h = 4$

(d) $4x + 9y = 56$
 $2x + 4y = 26$

(e) $3m + 2n = 17$
 $2m - 6n = -40$

(f) $5p - 2q = 23$
 $2p + 8q = -26$

(g) $2u + 3v = 23$
 $7u + v = -5$

(h) $8g - 4h = 20$
 $2g + 3h = -7$

(i) $5a + 2b = 23$
 $2a + 3b = 18$

(j) $5e - 3g = -8$
 $4e + 5g = 38$

(k) $4m - 2n = 16$
 $3m - 5n = 19$

(l) $7u - 3v = -16$
 $5u + 4v = 7$

(m) $3x - 5y = 15$
 $2x - 2y = 10$

(n) $3a + 7c = 97$
 $4a + 3c = 47$

(o) $2p + 2q = 110$
 $7p - 3q = 35$

(p) $4a - 6q = 2.3$
 $3a + 4q = 10.65$

(q) $5m - 2n = -17$
 $2m + 7n = -2.9$

(r) $4x + 4y = -20$
 $5x - 3y = -1$

Straight Line

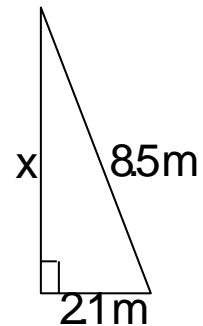
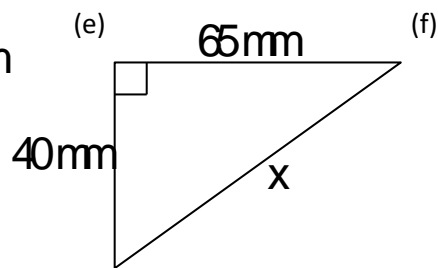
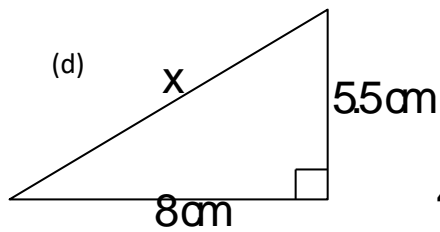
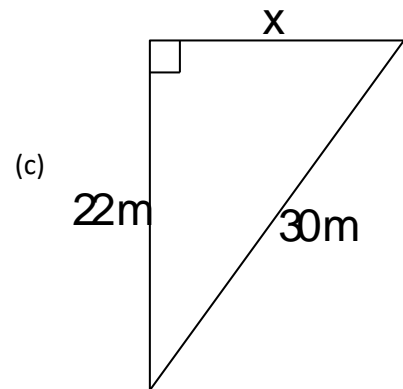
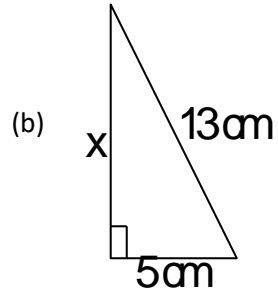
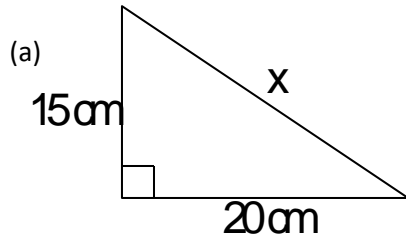
Q1 Find the equation of the line joining the points:

a) A(2,4) and B(3,6) b) C(3,5) and D(5,9) c) E(-2,-3) and F(2,5)

d) G(1,4) and H(3,7) e) I(3,7) and J(6,9) f) K(-1,2) and L(3,9)

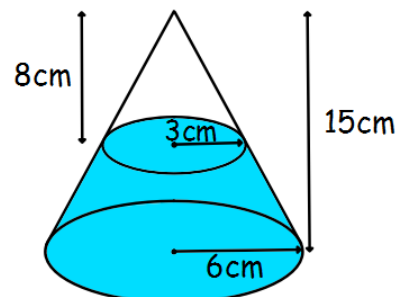
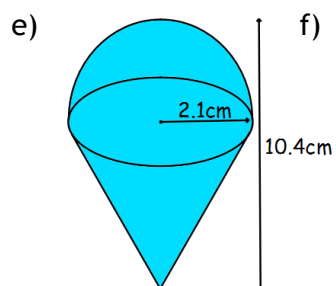
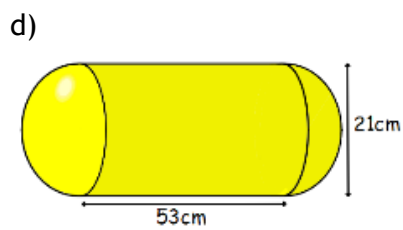
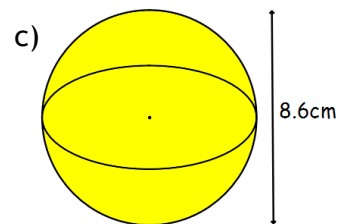
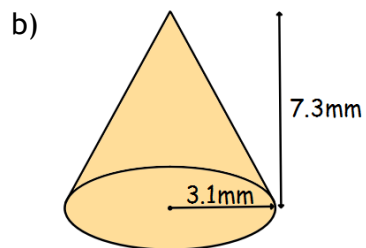
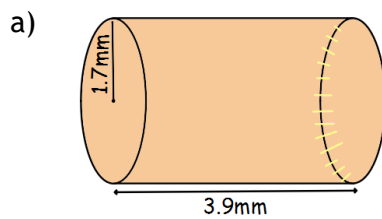
Pythagoras

1. Calculate x in each of the following.



Volume

Q1. Calculate the volume of:



Statistics

- Q1 The results for a group of students who sat tests in mathematics and physics are shown below:

<i>Mathematics (%)</i>	10	18	26	32	49
<i>Physics (%)</i>	25	35	30	40	41

Calculate the mean and standard deviation for the mathematics test.

- Q2 In a bakery, a sample of six fruit loaves is selected and weights, in grams, are recorded.

395 400 408 390 405 402

For the above data the mean is found to be 400 grams.

Calculate the standard deviation.