SUBJECT: Maths

UNIT: Year 8 Number & Data

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Key Concept
FDP equivalence

F	D	P
$\frac{1}{100}$	0.01	1%
$\frac{1}{10}$	0.1	10%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%

Examples

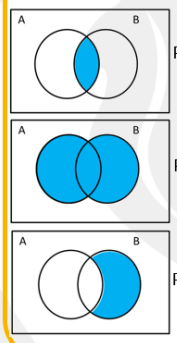
Make the denominators the same.

$\frac{3}{4} \rightarrow \frac{6}{8} \rightarrow \frac{1}{4}$ (4) $\quad \frac{3}{8} \rightarrow \frac{3}{8} \rightarrow \frac{3}{8}$ (2) $\quad \frac{1}{2} \rightarrow \frac{4}{8} \rightarrow \frac{1}{2}$ (3) $\quad \frac{7}{8} \rightarrow \frac{7}{8} \rightarrow \frac{3}{4}$ (5) $\quad \frac{1}{4} \rightarrow \frac{2}{8} \rightarrow \frac{7}{8}$ (1)

Convert them all to decimals.

56%	$\frac{3}{4}$	0.871	23%	$\frac{6}{7}$
0.56	0.75	0.871	0.23	0.857...
2	3	5	1	4
23%	56%	$\frac{5}{3}$	$\frac{1}{6}$	0.871

Key Concept – Venn Diagrams



Key Words

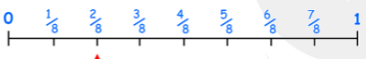
Fraction: A fraction is made up of a numerator (top) and a denominator (bottom).
Integer: Whole number.
Ascending Order: Place in order, smallest to largest.
Descending Order: Place in order, largest to smallest.
Probability: The chance of something happening as a numerical value.
Impossible: The outcome cannot happen.
Certain: The outcome will definitely happen.
Even chance: The are two different outcomes each with the same chance of happening.

Examples

1) What is the probability that a bead chosen will be **yellow**.
Show the answer on a number line.

$$Probability = \frac{Number\ of\ favourable\ outcomes}{Total\ number\ of\ outcomes}$$

$$P(Yellow) = \frac{2}{8} = \frac{1}{4}$$



2) How many **yellow** beads would you **expect** if you pulled a bead out and replaced it 40 times?

$$\frac{1}{4} \times 40 = \frac{1}{4} of 40 = 10$$

SUBJECT: Maths

UNIT: Year 8 Algebra

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Key Concepts

$a^m \times a^n = a^{m+n}$

$a^m \div a^n = a^{m-n}$

$(a^m)^n = a^{mn}$

$a^{\frac{1}{n}} = \sqrt[n]{a}$

$a^{-m} = \frac{1}{a^m}$

Examples

Simplify each of the following:

1) $a^6 \times a^4 = a^{6+4} = a^{10}$

2) $a^6 \div a^4 = a^{6-4} = a^2$

3) $(a^6)^4 = a^{6\times4} = a^{24}$

4) $(3a^4)^3 = 3^3a^{4\times3} = 27a^{12}$

5) $\frac{5^2 \times 5^6}{5^4} = \frac{5^8}{5^4} = 5^{8-4} = 5^4$

6) $a^{\frac{1}{2}} = \sqrt{a}$

7) $9^{\frac{1}{2}} = \sqrt{9} = 3 \text{ or } -3$

8) $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

Key Words

Powers
Roots
Indices
Reciprocal

Factorise

$x^2 + 5x + 6 = 0$

$x^2 + (2+3)x + 2\times3 = 0$

$(x + 2)(x + 3) = 0$

Key Concept - Double Brackets

Expanding- when expanding we multiply everything in one bracket by everything in the other. We can then simplify.

Factorising- The reverse of expanding. We take an expression, find the factors and put it back into brackets

Expand & Simplify:

$(x + 2)(x + 3)$

×	x	$+2$
x	x^2	$+2x$
$+3$	$+3x$	$+6$

$x^2 + 2x + 3x + 6$

$x^2 + 5x + 6$