

# ATM

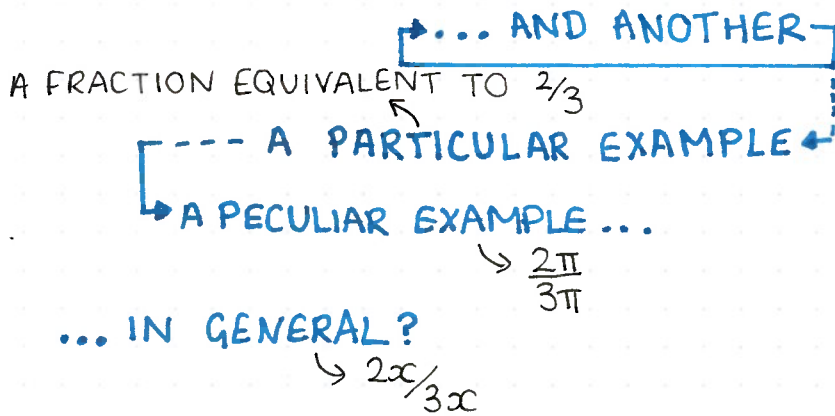
# Thinkers

Association of Teachers of Mathematics

Sketchnote summary by Charlotte Hawthorne ~ @mrshawthorne1

GIVE AN EXAMPLE...

OF A PAIR OF EQUIVALENT FRACTIONS



ADDITIONAL CONDITIONS

GIVE ME AN EXAMPLE OF

a set of numbers whose mean is 5

3, 4, 6, 7

... and whose mode is 4

2, 4, 4, 5, 10

... and whose median is 3

... and whose range is 6

(for the brave) ... and whose standard deviation is 1

ALWAYS

OR SQUARING A NUMBER MAKES IT BIGGER

SOMETIMES

A HEXAGON WITH EQUAL SIDES IS REGULAR

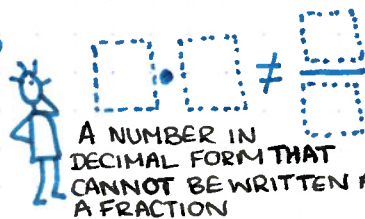
$$\sin 2x = 2 \sin x$$

NEVER

IMPOSSIBLE CONSTRUCTIONS

'IF EVERY TASK HAS A SOLUTION, LEARNERS MAY FORM THE IMPRESSION THAT ANY QUESTION CAN BE ANSWERED'

A SQUARE NUMBER WITH AN EVEN NUMBER OF FACTORS



HARD / EASY

'GIVE AN EXAMPLE WHICH IS REALLY HARD OR COMPLICATED AND ONE WHICH IS REALLY EASY OR SIMPLE'

★ THE EXAMPLES LEARNERS CHOOSE REVEAL A GOOD DEAL ABOUT WHAT THEY FIND DIFFICULT

★ 'CREATING A HARD EXAMPLE... IS ALSO A VALUABLE LEARNING EXPERIENCE.'

ORDERING 'PLACING SOME SIMILAR GIVEN OBJECTS IN ORDER CAN REVEAL DIFFERENCES AND SIMILARITIES'

E.g. Order a set of linear algebraic expressions according to what their value will be for certain values of  $x$ . How might this change for different values of  $x$ ?

$2x$        $x+2$        $x^2$

WITH AND ACROSS THE GRAIN

$4-1=3$	$5-1=4$	$6-1=5$
$4-2=2$	$5-2=3$	$6-2=4$
$4-3=1$	$5-3=2$	$6-3=3$