## RECALL

Write these numbers in order starting with the smallest.
$\frac{1}{2}$

smallest
$\frac{1}{4}$

largest

## LEARNING HABITS?



## GUIDED PRACTICE

Work out which fraction is closest to 0.4

$$
\begin{array}{llll}
\frac{1}{4} & \frac{1}{5} & \frac{3}{8} & \frac{3}{10} \\
\hline
\end{array}
$$

Can you write a fraction which is closer?

$$
\text { You can not write } \frac{2}{5} \text { or an equivalent fraction. }
$$

Which is the largest of these fractions?

$$
\frac{7}{15} \quad \frac{4}{9} \quad \frac{5}{11}
$$

## INTELLIGENT PRACTICE

| Place these fractions in <br> order, smallest to |
| :--- |
| $\frac{1}{12}$ $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{8}$ <br> What do you notice?    |



| Place these fractions in <br> order, smallest to largest. |  |  |  |
| :--- | :--- | :--- | :---: |
| $\frac{4}{12}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | $\frac{7}{8}$ |

Place these fractions in order, smallest to largest.
$\begin{array}{llll}\frac{5}{7} & \frac{3}{5} & \frac{2}{6} & \frac{7}{8}\end{array}$
$\square$

Use 3 of these fraction cards to complete the calculation

$\square$

$\square+\square=\frac{1}{2}$

## INTELLIGENT PRACTICE


$\frac{1}{12} \quad \frac{1}{8} \quad \frac{1}{4} \quad \frac{1}{2}$


Place these fractions in order, smallest to largest.

| $\frac{5}{7}$ | $\frac{3}{5}$ | $\frac{2}{6}$ | $\frac{7}{8}$ |
| :--- | :--- | :--- | :--- |

$\frac{2}{6} \frac{5}{7} \frac{3}{5} \frac{7}{8}$

Use 3 of these fraction cards to complete the calculation

$$
\square \frac{1}{4} \square \frac{1}{5}+\frac{1}{10}+\frac{1}{20}+\frac{1}{40}+\square=\frac{1}{2}
$$

## DIVE DEEPER 1

1) Fractions can be expressed as divisions. For example, $\frac{1}{2}=1 \div 2$ Write these fractions as divisions.
a) $\frac{1}{3}=$ $\qquad$ b) $\frac{2}{3}=$ $\qquad$ -
c) $\frac{4}{7}=$
d) $-=3 \div 5$
e) ${ }_{7}=3 \div$
f) $\frac{1}{10}=$ $\qquad$
2) Write an equivalent fraction and a decimal for each of the fractions marked on the number line.


## DIVE DEEPER 1 ANSWERS

1) Fractions can be expressed as divisions. For example, $\frac{1}{2}=1 \div 2$ Write these fractions as divisions.
a) $\frac{1}{3}=1 \div 3$
b) $\frac{2}{3}=2 \div 3$
c) $\frac{4}{7}=4 \div 7$
d) $\frac{3}{5}=3 \div 5$
e) $\frac{3}{7}=3 \div 7$
f) $\frac{1}{10}=1 \div 10$
2) Write an equivalent fraction and a decimal for each of the fractions marked on the number line.


## DIVE DEEPER 2

3) Write each of these calculations as a fraction and a decimal.
$3 \div 2$
$11 \div 8$
$5 \div 6$
$2 \div 3$
4) Jack says that, ' I converted $\frac{1}{2}$ to a decimal and got the answer 2.'

Jack is incorrect.
Explain the mistake that Jack has made.
5) Dora: To find $\frac{19}{20}$ as a decimal, I found $\frac{1}{20}$ as a decimal, then took it ways from 1.

Use Dora's method to find the decimal equivalent for $\frac{49}{50}$
6) Filip is thinking of a fractions.

When he converts it to a decimal, it is smaller than 0.5 but greater than 0.4.
What fraction could Filip be thinking of?
How many possibilities can you find?

## DIVE DEEPER 2 ANSWERS

3) Write each of these calculations as a fraction and a decimal.
$3 \div 2=\frac{3}{2}=1.5 \quad 11 \div 8=\frac{11}{8}=1.375 \quad 5 \div 6=\frac{5}{6}=0.833 \quad 2 \div 3=\frac{2}{3}=0.66$
4) Jack says that, ' I converted $\frac{1}{2}$ to a decimal and got the answer 2.'

Jack is incorrect.
Jack is incorrect because he divided 2 by 1 not 1 by 2 .
5) Dora: To find $\frac{19}{20}$ as a decimal, I found $\frac{1}{20}$ as a decimal, then took it ways from 1.

Use Dora's method to find the decimal equivalent for $\frac{49}{50}$
$\frac{1}{50}=0.02 \quad 1-0.02=0.98 \quad \frac{49}{20}=0.98$
6) Filip is thinking of a fraction.

When he converts it to a decimal, it is smaller than 0.5 but greater than 0.4.
What fraction could Filip be thinking of? $\frac{2}{5}>\frac{1}{2}$
How many possibilities can you find?

## DIVE DEEPER 3

Write a fraction which is greater than 0.7 and less than 0.71
Write a decimal which is greater than $\frac{4}{7}$ and less than $\frac{5}{7}$
Which one of these fracions is closest in value to $\frac{1}{3}$ ?

| $\frac{10}{31}$ | $\frac{20}{61}$ | $\frac{30}{91}$ | $\frac{40}{121}$ | $\frac{50}{151}$ |
| :--- | :--- | :--- | :--- | :--- |

$$
\frac{5}{11}=0.454545 \ldots
$$

Find a fraction that is equal in value to
0.0454545 ...

Find the decimal equivalents of
$\frac{1}{9}, \frac{1}{99}, \frac{1}{999}, \frac{1}{9999}, \ldots$.
Explain the pattern you get and generalise.

## DIVE DEEPER 4

If I gave you a list of decimals, you might find it quite straight forward to put them in order of size. But what about ordering fractions?

A man called John Farey investigated sequences of fractions in order of size they are called Farey Sequences.

The third Farey Sequence, F3, looks like this:

| $\frac{0}{1}$ | $\frac{1}{3}$ | $\frac{1}{2}$ | $\frac{2}{3}$ | $\frac{1}{1}$ |
| :--- | :--- | :--- | :--- | :--- |

It lists in order all the fractions between 0 and 1, in their simplest forms, with denominators up to and including 3.

F4 lists all the fractions between 0 and 1, in their simplest forms, with denominators up to and including 4. Can you write it out?

How could we check if we have got them all in the right order?
Can you work out F5 or F6?
What do you notice about the number of fractions in each sequence?

SELF-ASSESSMENT

- Some will even be able to reason about the magnitude of fractions and decimals equivalence
- Some will be able to spot patterns within decimal and fraction equivalences
- Most will be able to use division to covert fractions to decimals
- All will be able to recall decimal equivalence for $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$

