Striving To Improve

PHOTOCOPY MASTERS

Fractions, Decimals And Percentages

For students aged 11 - 15 years who are underachieving at their year level.

Ready-Ed Publications

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Teachers' Notes

This resource is focused on the Number and Algebra area of the curriculum for lower ability students and those who need further opportunity to consolidate these core areas in Mathematics.

Each section provides students with the opportunity to consolidate written and mental methods of calculation, with an emphasis on process and understanding.

The section entitled *Skills With Decimals* enables students to re-encounter ideas in decimal place value, calculations with decimals, comparing decimal quantities and rounding decimal amounts. These activities are a useful way to scaffold a new unit of Mathematics and will help build confidence for lower ability students to attempt more challenging problems at their year level.

The section entitled *Fractions, Decimals And Percentages* walks students through conversions between fractions, decimals and percentages. The activities are designed to guide student learning with minimal input from the teacher and there is a strong emphasis on process and understanding. Students explore mental and written methods for performing conversion calculations. Attention is also given to real world applications and uses of these different representations, with an emphasis on understanding and using percentages.

The activities can be used for individual students needing further consolidation in a mainstream classroom or as instructional worksheets for a whole class of lower ability students. The activities range from grade levels of Year 5 through to Year 7 and are appropriate for students requiring extra support in Years 7, 8 and 9.

It is hoped that *Fractions, Decimals And Percentages* will be used to help teachers provide appropriate resources and support to those students in greatest need. The book as a whole can be used as a programme of work for those students on a Modified Course or Independent Learning Programme. Activities are sufficiently guided so that students can work independently and at their own pace without constant supervision and guidance from the teacher.

Decimal Place Value 3

- Look at the numbers 54̲32 and 62.4̲5. Four represents a different value for each number even though it is the same digit.

Example

$5\underline{4}32 = 4 \times 100 = 400$

$62.\underline{4}5 = 4 \times {}^{1}/_{10} = {}^{4}/_{10}$

✱ TASK A **What value does each underlined number represent below?**

96̲75	29.3̲8	1̲.987	13̲5.3	209.0̲8 .....
24.3̲4	14̲7.2	100.33̲3	24.2̲4	999.9̲9 .....

- Look at the decimal number 24.35 in expanded form.

Example

$24.35 = 20 + 4 + \frac{3}{10} + \frac{5}{100}$

$(2 \times 10) + (4 \times 1) + (3 \times \frac{1}{10}) + (5 \times \frac{1}{100})$

✱ TASK B **Write these decimals in expanded form.**

a. 136.57 = ...

.....

b. 26.987 = ...

.....

c. 35.57 = ...

.....

d. 49.08 = ...

.....

e. 765.297 = ...

.....

✱ TASK C **Use < or > to make these true.**

35.46 ☐ 3.546	1.256 ☐ 125.6	24.78 ☐ 2.478	1000 ☐ 1.000
2.002 ☐ 2.2	860.086 ☐ 860.068	2.3 ☐ 3.2	56.65 ☐ 65.56
980 ☐ 9.8	12 ☐ 0.12	154.3 ☐ 134.5	264.1 ☐ 264.9

✱ CHALLENGE

Andrew is putting petrol into Dad's car. The litre gauge has stopped and reads 40.72 litres. What value in litres does the 7 represent?

❂ Decimal Subtraction 1

- Subtracting decimals is like regular subtraction. You regroup the same way. Just remember to keep the decimal point in the correct place so it lines up and down the column.

Examples

5. 45 – 3. 22 2. 23	5. $\overset{6}{\cancel{7}}\overset{1}{4}$ – 4. 15 1. 59	$\overset{7}{\cancel{8}}\overset{12}{.}\overset{1}{\cancel{3}}6$ – 1. 78 6. 58
No regrouping	Regrouping one column	Regrouping two columns

WORK FROM RIGHT TO LEFT ←

✱ TASK A Try these sums with no regrouping.

7. 55 – 2. 24	5. 28 – 2. 23	9. 67 – 1. 50
7. 43 – 3. 12	8. 89 – 2. 63	2. 87 – 1. 23

✱ TASK B Try these sums regrouping one column.

8. 47 – 2. 19	5. 74 – 2. 26	6. 76 – 1. 39
8. 42 – 3. 17	5. 43 – 2. 28	7. 36 – 3. 28

✱ TASK C Try these sums regrouping two columns.

$7. 52 – $1. 86	$8. 32 – $4. 57	$6. 56 – $2. 79

Multiplying Decimals 1

TASK A **Complete the following sets of multiplication problems.**

SET 1

$454	$354	$786	$576	$709	$903
x 3	x 4	x 7	x 5	x 8	x 6
$1362					

SET 2

$3.00	$8.00	$7.00	$6.00	$2.00	$9.00
x 2	x 5	x 6	x 8	x 4	x 7
$6.00					

SET 3

$4.50	$5.60	$3.90	$2.80	$7.50	$3.20
x 4	x 4	x 6	x 7	x 6	x 10
$18.00					

SET 4

$3.87	$8.39	$2.39	$8.05	$3.01	$6.32
x 10	x 6	x 4	x 7	x 8	x 5
$38.70					

SET 5

67.3 m	35.4 cm	25.4 kg	46.9 mL	35.7	12.8 mm
x 4	x 3	x 5	x 4	x 3	x 3
269.2 m					

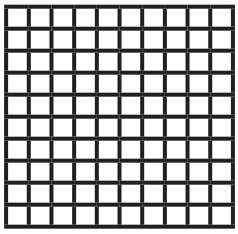
TASK B: WORD PROBLEMS

Use the back of this sheet for your working out.

1. Every day Kelli rode 5.25 km on her horse. How far would she ride in one week?
2. Jess paid $3.95 for 8 books. How much did she pay altogether?
3. Peter bought 10 computer disks for $9.95 each. How much did he spend altogether?
4. Joe has 8 boxes of tomatoes, each weighing 12.7 kg. What is the total weight of the boxes?
5. Donelle swam 720 metres a day. How much would she swim in one week?
6. Chrissie sold 6 airline tickets for $765 each. How much did she sell the tickets for altogether?
7. Tarlie bought 5 CDs at $24.95 each. How much did she pay altogether?

❂ Shading Decimal And Fraction Quantities 2

✱ TASK A **The grids below have been divided into 100 units. Shade the amount shown underneath.**



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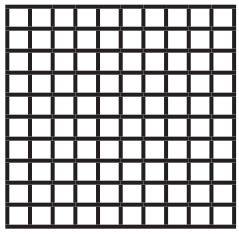

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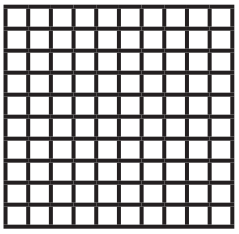

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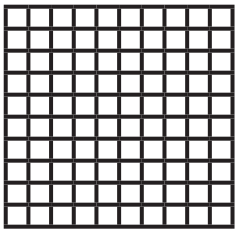

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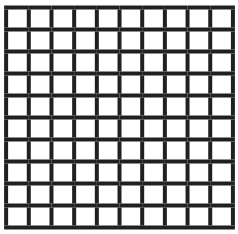

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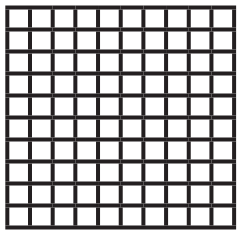

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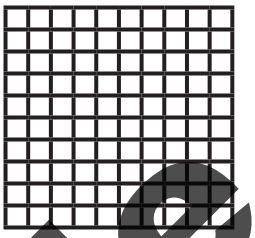

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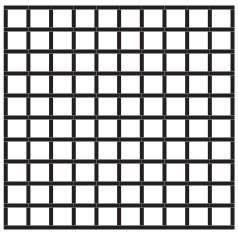

0.8

What fraction of the above grids have you shaded? Express in the simplest form.

a. $\frac{20}{100} = \frac{1}{5}$ **b.** ..... **c.** ..... **d.** .....

e. ..... **f.** ..... **g.** ..... **h.** .....

✱ TASK B **Complete these using = or ≠.**

$\frac{3}{4}$ ☐ 0.75 $\frac{2}{6}$ ☐ 0.4 $\frac{8}{10}$ ☐ 0.8 $\frac{2}{3}$ ☐ 0.3

$\frac{4}{8}$ ☐ 0.6 $\frac{1}{3}$ ☐ 0.3 $\frac{4}{8}$ ☐ 0.6 $\frac{2}{5}$ ☐ 0.25

✱ TASK C **Use =, < or > to complete these.**

$1\frac{3}{4}$ ☐ 1.75 $2\frac{4}{8}$ ☐ 2.4

$9\frac{8}{10}$ ☐ 9.8 $6\frac{5}{100}$ ☐ 6.5

✱ TASK D: CHALLENGE

Bridget has painted 0.75 of the garage door.
What fraction does she still need to paint?

Fractions And Decimal Conversions 1

Example $2.05 = 2\frac{5}{100} = 2\frac{1}{20}$

TASK A — Express these decimals as simplified fractions.

3.2	4.65	5.25	13.26	7.8 .....
623.02	0.5	4.04	6.008	22.22 .....
7.75	3.025	12.6	10.42	17.017 .....

TASK B — Convert these fractions to decimals.

$\frac{3}{10}$	$\frac{50}{100}$	$\frac{30}{100}$	$\frac{24}{1000}$	$\frac{15}{1000}$ .....
$\frac{12}{100}$	$\frac{57}{100}$	$\frac{350}{1000}$	$\frac{3}{1000}$	$\frac{23}{1000}$ .....
$\frac{49}{100}$	$\frac{23}{100}$	$\frac{7}{10}$	$\frac{70}{100}$	$\frac{700}{1000}$ .....

Example $\frac{435}{100} = 4.35$

TASK C — Change these improper fractions to decimals.

$\frac{16}{10}$	$\frac{39}{10}$	$\frac{143}{100}$	$\frac{198}{100}$	$\frac{11}{10}$ .....
$\frac{32}{10}$	$\frac{25}{10}$	$\frac{43}{10}$	$\frac{656}{100}$	$\frac{264}{100}$ .....
$\frac{2795}{100}$	$\frac{3423}{1000}$	$\frac{9098}{100}$	$\frac{3456}{1000}$	$\frac{578}{10}$ .....

TASK D — Write five equivalent fractions for each decimal below.

6.5 = ...

2.25 = ...

0.75 = ...

3.6 = ...

9.75 = ...

TASK C: CHALLENGE

Matthew is counting his savings and has calculated that he has 687 ¢. Express this amount as a decimal and also as a fraction.

✱ Fraction And Percentage Conversions

✱ TASK A **Convert each of the following percentages to fractions. Be sure to simplify your answers. The first one has been done for you.**

a. $85\% = \frac{85 \div 5 \rightarrow}{100 \div 5 \rightarrow} = \frac{17}{20}$

b. 20%

c. 100%

d. 42%

e. 64%

f. 96%

g. 130%

h. 86%

i. 54%

✱ TASK B **Convert each fraction to a percentage. The first one has been done for you.**

a. $\frac{2}{\cancel{5}} \times \cancel{100}^{20} = 2 \times 20 = 40\%$

b. $\frac{1}{2}$

c. $\frac{3}{10}$

d. $\frac{3}{4}$

e. $\frac{4}{5}$

f. $\frac{7}{25}$

g. $\frac{3}{50}$

h. $\frac{1}{3}$

i. $\frac{2}{3}$

✱ TASK C: PERSONAL CHALLENGE

To convert fractions whose denominator does not divide evenly into 100 we can use short division. See if you can use short division to convert each of the following fractions to percentages.

$\frac{3}{8}$, $\frac{2}{15}$, $\frac{7}{8}$, $\frac{3}{14}$, $\frac{1}{24}$