12.01.21—Divide decimals by integers

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

1) When using the counters to answer 3.27 divided by 3, this is what Tommy did:

Ones	•	Tenths	Hundredths
1 1 1		0.1 0.1 0.01	0.01 0.01 0.01 0.01 0.01 0.01 0.01

Tommy says,

> I only had 2 counters in the tenths column, so I moved one of the hundredths so each column could be grouped in 3s.

Do you agree with what Tommy has done? Explain why.

---

2)

$$C \text{ is } \frac{1}{4} \text{ of } A$$
$$B = C + 2$$

Use the clues to complete the division.

$$
\begin{array}{r}
0.B\,B \\
A\,C\overline{).C\,B\,C\,2}
\end{array}
$$

Answers can be found on the next page.

12.01.21 Reasoning and problem solving—Maths extension

ANSWER SHEET

1) When using the counters to answer 3.27 divided by 3, this is what Tommy did:

Ones	•	Tenths	Hundredths
1 1 1		0.1 0.1 0.01	0.01 0.01 0.01 0.01 0.01 0.01 0.01

Tommy says,

> I only had 2 counters in the tenths column, so I moved one of the hundredths so each column could be grouped in 3s.

Do you agree with what Tommy has done? Explain why.

Possible answer:

Tommy is incorrect because he cannot move a hundredth to the tenths.
He should have exchanged the 2 tenths for hundredths to get an answer of 1.09

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2)

$$C \text{ is } \frac{1}{4} \text{ of A}$$
$$B = C + 2$$

Use the clues to complete the division.

$$0.BB$$
$$A \overline{| C.{}^C B{}^C 2}$$

Children may try A as 8 and C as 2 but will realise that this cannot complete the whole division.

Therefore A is 4, B is 3 and C is 1

$$0.33$$
$$4 \overline{| 1.{}^1 3{}^1 2}$$

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

1) Each division sentence can be completed using the digits below.

| 1 | 2 | 3 | 4 | 5 | 6 |

$$\boxed{}.3 \div \boxed{} = 0.26$$

$$12.\boxed{} \div \boxed{} = 4.2$$

$$4.\boxed{}8 \div \boxed{} = 1.07$$

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2) Jack and Rosie are both calculating the answer to $147 \div 4$

Jack says,

> The answer is 36 remainder 3

Rosie says,

> The answer is 36.75

Who do you agree with?

Answers can be found on the next page.

13.01.21 Reasoning and problem solving—Maths extension

ANSWER SHEET

1) Each division sentence can be completed using the digits below.

$1.3 \div 5 = 0.26$
$12.6 \div 3 = 4.2$
$4.28 \div 4 = 1.07$

$$\boxed{}.3 \div \boxed{} = 0.26$$

$$12.\boxed{} \div \boxed{} = 4.2$$

$$4.\boxed{}8 \div \boxed{} = 1.07$$

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2) Jack and Rosie are both calculating the answer to $147 \div 4$

Jack says,

> The answer is 36 remainder 3

Rosie says,

> The answer is 36.75
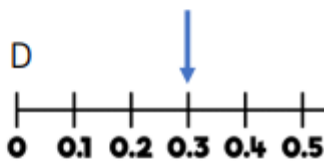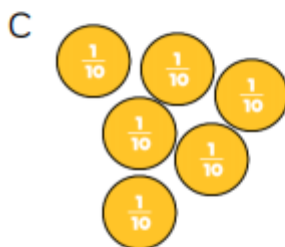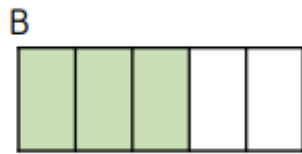
Who do you agree with?

They are both correct.

Rosie has divided her remainder of 3 by 4 to get 0.75 whereas Jack has recorded his as a remainder.

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

1) Odd one out.

A $\quad$ 0.1 $\quad$ 0.1 $\quad$ 0.1
$\quad$ 0.1 $\quad$ 0.1 $\quad$ 0.1

B

C $\quad$ $\frac{1}{10}$ $\quad$ $\frac{1}{10}$ $\quad$ $\frac{1}{10}$
$\quad$ $\frac{1}{10}$ $\quad$ $\frac{1}{10}$
$\quad$ $\frac{1}{10}$

D

0 $\quad$ 0.1 $\quad$ 0.2 $\quad$ 0.3 $\quad$ 0.4 $\quad$ 0.5

E

F $\quad$ 0.2×3

Which is the odd one out and why?

2) Alex says,

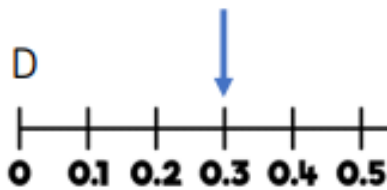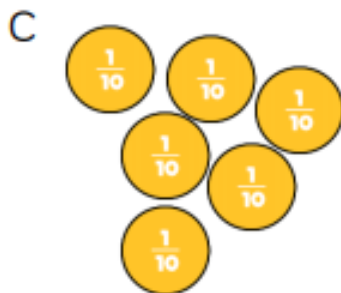0.84 is equivalent to $\frac{84}{10}$

Do you agree?
Explain why.

Answers can be found on the next page.

14.01.21 Reasoning and problem solving—Maths extension

ANSWER SHEET

1) Odd one out.

A

0.1 0.1 0.1
0.1 0.1 0.1

B

C

$\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$
$\frac{1}{10}$ $\frac{1}{10}$
$\frac{1}{10}$

D

0 0.1 0.2 0.3 0.4 0.5

E

F 0.2×3

Which is the odd one out and why?

Possible response:

D is the odd one out because it shows 0.3

Explore how the rest represent 0.6

2) Alex says,

0.84 is equivalent to $\frac{84}{10}$

Do you agree?
Explain why.

Possible response:

Alex is wrong because 0.84 is 8 tenths and 4 hundredths and $\frac{84}{10}$ is 84 tenths.

15.01.21 Fractions to decimals (1)

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

1) Amir says,

> The decimal 0.42 can be read as 'four tenths and two hundredths'.

Teddy says,

> The decimal 0.42 can be read as 'forty-two hundredths'.

Who do you agree with?
Explain your answer.

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2) **True or False?**

> 0.3 is bigger than $\frac{1}{4}$

Explain your reasoning.

---

3) Dora and Whitney are converting $\frac{30}{500}$ into a decimal.

- Dora doubles the numerator and denominator, then divides by 10

- Whitney divides both the numerator and the denominator by 5

- Both get the answer $\frac{6}{100} = 0.06$

Which method would you use to work out each of the following?

$$\frac{25}{500} \quad \frac{125}{500} \quad \frac{40}{500} \quad \frac{350}{500}$$

Explain why you have used a certain method.

Answers can be found on the next page.

15.01.21 Reasoning and problem solving—Maths extension

ANSWER SHEET

1) Amir says,

> The decimal 0.42 can be read as 'four tenths and two hundredths'.

Teddy says,

> The decimal 0.42 can be read as 'forty-two hundredths'.

Who do you agree with?
Explain your answer.

Both are correct. Four tenths are equivalent to forty hundredths, plus the two hundredths equals forty-two hundredths.

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2) **True or False?**

0.3 is bigger than $\frac{1}{4}$

Explain your reasoning.

True because $\frac{1}{4}$ is 25 hundredths and 0.3 is 30 hundredths. Therefore, 0.3 is bigger.

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3) Dora and Whitney are converting $\frac{30}{500}$ into a decimal.

- Dora doubles the numerator and denominator, then divides by 10

- Whitney divides both the numerator and the denominator by 5

- Both get the answer $\frac{6}{100}$ = 0.06

Which method would you use to work out each of the following?

$\frac{25}{500}$ $\frac{125}{500}$ $\frac{40}{500}$ $\frac{350}{500}$

Explain why you have used a certain method.

Possible response:

$\frac{25}{500}$ - divide by 5, known division fact.

$\frac{125}{500}$ - double, easier than dividing 125 by 5

$\frac{40}{500}$ - divide by 5, known division fact.

$\frac{350}{500}$ - double, easier than dividing 350 by 5