Reasoning and Problem Solving
Decimals Consolidation – Year 4

About This Resource

This resource is aimed at Year 4 Secure and has been designed to give children the opportunity to consolidate the skills they have learned in Spring Block 4 Decimals.

The questions are based on a selection of the same 'small steps' that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Recognise tenths and hundredths
Tenths as decimals
Tenths on a number line
Divide 1 digit by 10
Divide 2 digits by 10
Hundredths
Hundredths as decimals
Hundredths on a place value grid
Divide 1 or 2 digits by 100

National Curriculum Objectives

Mathematics Year 4 (4F6b) Recognise and write decimal equivalents of any number of tenths or hundredths
Mathematics Year 4 (4F9) Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
Mathematics Year 4 (4F10b) Solve simple measure and money problems involving fractions and decimals to two decimal places
Mathematics Year 4 (4M5) Convert between different units of measure [for example, kilometre to metre]

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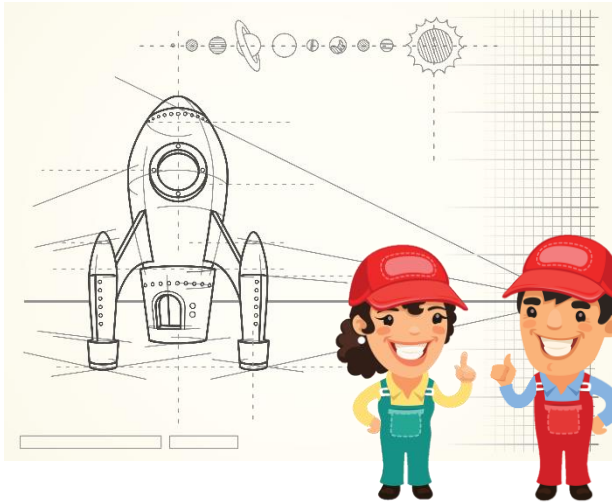
Kendra and her team have been hard at work for months designing a new rocket at the National Agency of Space Exploration.

Now that the plans are in place, it is finally time to prepare for the first official test run!

1. Pedro is checking over the blueprints and notices that some of the calculations are incorrect. Find and fix the mistakes.

A $\frac{64}{100}$
$\frac{6}{100}$ $\frac{4}{10}$

B $\frac{82}{100}$
$\frac{6}{10}$ $\frac{12}{100}$

C $\frac{79}{100}$
$\frac{5}{10}$ $\frac{19}{100}$

2. Next, he must order windows for the observation deck. The thicker the window is, the safer it will be for the astronauts inside. He is given three options. Fill in the missing values to determine the window widths he has to choose from. All values are measured in mm. Write the width of each window as a decimal.

22 tenths < [_____ mm] < 2 wholes and 4 tenths

5 tenths < [_____ mm] < 7 tenths

4 wholes and 4 tenths < [_____ mm] < 46 tenths

Which window is the safest choice? Explain why.

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3. While Pedro is ringing the window company, Kendra has a look at the control board. Several switches and buttons are yet to be installed. "These are all out of order!" she mumbles. Here are the buttons she takes off:

$\frac{42}{10}$ $\frac{46}{10}$ $\frac{44}{10}$ $\frac{49}{10}$ $\frac{48}{10}$ $\frac{45}{10}$

Help Kendra sort the control board by converting the values to decimals and re-installing the buttons in the correct order.

Which buttons is she missing to complete the sequence?

4. Now that the control board is sorted, it is extremely important for every seat to be fitted with a seat belt. There are 10 seats in the control room that need seatbelts. All seatbelts on the rocket should be at least 70 cm long.

Reams of seatbelts come in lengths of 4m, 6m and 9m. Which ream should be purchased for the rocket so that all 10 seats are fitted appropriately?

5. Some of the team are measuring the efficiency of the backup reserve fuel tank to make sure the flight crew will be able to handle an emergency. If the rocket burns 1l of fuel travelling 10 light years, how many litres of fuel will it burn travelling 75 light years?

6. After running some tests, Pedro discovers that the computer is not outputting data accurately. Fix the errors and amend the log book.

6 tenths and 12 hundredths = 6.12	
8 tenths and 27 hundredths = 27.8	
14 tenths and 24 hundredths = 3.8	

7. Someone has misplaced the instruction booklet that came with the control board! "Oh dear! I'll have to figure out all the potential launch codes using these digits and this grid." says Kendra.

5	0	2	3

O ●	T	H
●		

Place one digit card in either the ones, tenths or hundredths column. How many combinations are there?

"I remember reading that, when added together, the two launch codes equal 7.82," thinks Kendra. If this is true, what are the launch codes?

8. The launch codes worked and the rocket shoots off for it's first test run! This test will confirm if the rocket is fit for exploratory missions. Nearly everything goes smoothly on the test run; the only problem is that all the distances communicated back to the team are given in metres, but the log book requires them to be recorded in kilometres. Convert each distance and record it in the log book in metres to officially complete the test run.

Minute	Distance in m	Distance in km	Minute	Distance in m	Distance in km
Minute 1	100 metres		Minute 4	170 metres	
Minute 2	120 metres		Minute 5	230 metres	
Minute 3	150 metres		Minute 6	250 metres	

1. Various answers; examples: A should be partitioned into 6 tenths and 4 hundredths. B should be partitioned into 6 tenths and 22 hundredths. C should be partitioned into 6 tenths and 19 hundredths.

2. The windows can be 2.3mm, 0.6mm, or 4.5mm wide. The safest option is 4.5 because it is the thickest.

3. 4.2, 4.4, 4.5, 4.6, 4.8, 4.9
She is missing 4.3, 4.7 and 5

4. 9m of seatbelt should be purchased. Each seatbelt could be up to 0.7m or 70cm in length so ten seatbelts will need 7m. 6m is not enough.

5. The rocket will burn 7.5 litres of fuel travelling 75 light years.

6. 6 tenths and 12 hundredths = 0.6 and 0.12 = 0.72
8 tenths and 27 hundredths = 0.8 and 0.27 =1.07
14 tenths and 24 hundredths = 1.4 and 0.24 =1.64

7. There are 24 combinations: 0.23, 0.25, 0.52, 0.53, 0.32, 0.35, 2.03, 2.05, 2.30, 2.50, 2.35, 2.53, 3.02, 3.05, 3.20, 3.50, 3.25, 3.52, 5.02, 5.03, 5.20, 5.30, 5.23, 5.32

The launch code combination is 2.50 and 5.32

8.

Minute	Distance in m	Distance in km	Minute	Distance in m	Distance in km
Minute 1	100 metres	0.1 km	Minute 4	170 metres	0.17 km
Minute 2	120 metres	0.12 km	Minute 5	230 metres	0.23 km
Minute 3	150 metres	0.15 km	Minute 6	250 metres	0.25 km

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