

Independent Recap

Algebra and Measures
Week 8

Year 6

Arithmetic

1. $\frac{5}{8} \times \frac{2}{5}$

2. $3 - 1.4$

3. 0.25×20

4. $1\frac{3}{4} \times 12$

Practice: Forming and Solving 2 Step Equations

5. Recap: Explain why it is important to 'do the same to both sides' in algebra.



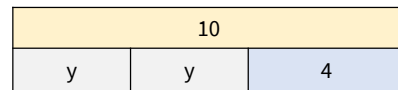
$y - 4 = 12$

6. Using y to represent the missing number, write this as an algebraic equation.
I think of a number. I multiply by 4 and subtract 2. My answer is 18.

7. Write this as an algebraic equation.

I think of a number. I divide it by 2 and add 9. My answer is 11.

8. Use the bar model to solve this equation.

9. Draw a bar model to find y in these expressions.

a. $2y + 2 = 38$

b. $\frac{y}{5} + 10 = 14$

10. Explain the order of operations.

11. Solve the equations to find y .

a. $42 = 9y + 6$

b. $10 = 7y - 7.5$

12. Solve the equations to find y .

a. $0 = \frac{y}{3} - 3$

b. $\frac{y}{6} + 8 = 10.5$

13. $4a - 3 = 49$

Husnain says $a = 184$.

Explain Husnain's mistake.

Challenge

14. Karen is baking a cake. The recipe she's using is very confusing. Help her find the correct measure for each ingredient.

Flour - 110g

Sugar - $5y + 15$ Butter - $12(y - 10)$ Butter cream - $23y + 13$

Sugar is the same as flour.

Find how much butter and butter cream she needs.

You might want
to talk to an adult

Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{5}{8} \times \frac{2}{5}$	$\frac{10}{40}$ or $\frac{1}{4}$
2	$3 - 1.4$	1.6
3	0.25×20	5
4	$1 \frac{3}{4} \times 12$	21
5	Explain why it is important to 'do the same to both sides' in algebra.	It is important that pupils understand the = sign means the equation is balanced. Using the example, if they added 4 to one side to remove it from one side but didn't do the same to the other, the calculation would be uneven and the answer incorrect as y cannot = 12.
6	Write this as an algebraic equation.	$4y - 2 = 18$
7	Write this as an algebraic equation.	$\frac{y}{2} + 9 = 11$
8	Use the bar model to solve this equation.	The equation is $2y + 4 = 10$ Pupils should have started by subtracting four from both sides leaving $2y = 6$ then dividing both sides by 2. $y = 3$
9	Draw a bar model to find y in these expressions.	a. $y = 18$, b. 20
10	Explain the order of operations.	BODMAS or BIDMAS B - brackets O/ I - of or indices (for example squared numbers or cubed numbers) D/ M - division and multiplication A/ S - addition and subtraction Pupils need to understand that the order they complete calculations is important. If they do not follow the order of operations, the answer they find will be incorrect. Division and multiplication can be completed in any order after brackets and indices. This is similar to addition and subtraction, providing they are completed last.
11	Solve the equations to find y .	a. 4, b. 2.5
12	Solve the equations to find y .	a. 9, b. 15
13	Explain Husnain's mistake.	Husnain has not completed the inverse to find the value of a . He has taken 49, subtracted 3 then multiplied by 4. Husnain should have added three to both sides (leaving $4a = 52$) then divided both sides by 4. The correct answer is $a = 13$.
14	Find how much butter and butter cream Karen needs.	$5y + 15 = 110g$ $5y = 95g$ $y = 19$ Butter = 108g Buttercream = 450g

Arithmetic

1. $\frac{9}{10} \times \frac{4}{7}$

2. $9 - 4.18$

3. 0.3×70

4. $2 \frac{2}{3} \times 11$

Practice: Finding Pairs of Values

5. Recap: When finding pairs of values, why would an understanding of factors be useful? For example $ab = 12$. a and b are whole numbers.



6. Write this as an algebraic equation.

I think of a number (y) and add another number to it (z). My answer is 12.

7. Write this as an algebraic equation.

I think of a number (y) and multiply it by another number (z). My answer is 64.

8. $yz = 64$.

y is a one digit odd number.

z is a two digit even number.

$y =$

$z =$

9. $w + z = 20$

w is a one digit odd number.

z is a two digit odd number.

Give one possible value for w and z .

10. Why is it important to work systematically in algebra (and in mathematics).



11. $\frac{a}{b} = 2$

Give two possible values for a and b .

$a =$ $b =$

$a =$ $b =$

12. $c - d = 3$ c and d are both below 10.
Give two possible values for c and d .

$c =$ $d =$

$c =$ $d =$

13. Rehan is solving $fg = 4$.



He gives this possible solution: $f = 1$, $g = 3$.

Explain Rehan's mistake.

Challenge

14.

$ab = 80$

a and b are integers above 0. Showing all possible values for a and b .

Prove you have found all the answers.



You might want
to talk to an adult



Spot the mistake

Answers

Q no.	Question	Answer												
1	$\frac{9}{10} \times \frac{4}{7}$	$\frac{36}{70}$ or $\frac{18}{35}$												
2	$9 - 4.18$	4.82												
3	0.3×70	21												
4	$2 \frac{2}{3} \times 11$	$\frac{88}{3}$ or $29 \frac{1}{3}$												
5	When finding pairs of values, why would an understanding of factors be useful?	If pupils are attempting to find a pair of values where two unknown whole numbers are multiplied to provide an answer, they can use their knowledge of factors to work out all the possible answers. Using the example, a and b could be 1 and 12, 2 and 6, 3 and 4 (or the numbers reverse).												
6	Write this as an algebraic equation.	$y + z = 12$ or $z + y = 12$												
7	Write this as an algebraic equation.	$yz = 64$ or $zy = 64$												
8	$yz = 64$. $y = ?$ $z = ?$	$y = 1$, $z = 64$												
9	Give one possible value for w and z.	$w = 1, 3, 5, 7, 9$ $z = 19, 17, 15, 13, 11$ The values given by pupils must add to 20.												
10	Why is it important to work systematically in algebra (and in mathematics).	It is important to work systematically so that possible solutions are not missed. If one works at random in maths, it is very difficult to ensure that nothing has been missed.												
11	Give two possible values for a and b.	Accept answers where a divided by b = 2. Example answers: a = 8 and b = 4, a = 4 and b = 2, a = 100 and b = 50												
12	c and d are both below 10. Give two possible values for c and d.	As this question does not state that c and d are integers, pupils could have a range of answers. Accept any answers with a difference of 3. Example answers: c = 9.5 and d = 6.5, c = 7 and d = 4, c = 4.75 and d = 1.75												
13	Explain Rehan's mistake.	Rehan has misunderstood what it means when two letters are next to each other in algebra. He has understood it as $f + g = 4$ when it actually means $f \times g = 4$.												
14	$ab = 80$ a and b are integers above 0. Complete the table showing all possible values for a and b. Prove you have found all the answers.	<table><tr><th>a</th><th>b</th></tr><tr><td>1</td><td>80</td></tr><tr><td>2</td><td>40</td></tr><tr><td>4</td><td>20</td></tr><tr><td>5</td><td>16</td></tr><tr><td>8</td><td>10</td></tr></table> Numbers in the rows can also be reversed (for example, a = 80, b = 1). Pupils should be encouraged to think about how to prove they have found all the answers beyond saying they have filled up the grid. They will have found all the answers when they have found all the factor pairs.	a	b	1	80	2	40	4	20	5	16	8	10
a	b													
1	80													
2	40													
4	20													
5	16													
8	10													

Arithmetic

1. $\frac{3}{4} \times \frac{2}{5}$

2. $4 - 0.76$

3. 0.5×28

4. $2\frac{1}{2} \times 5$

Practice: Convert Metric Measures

5. Recap: What does 'metric' mean?



6. Convert to kilograms.

a. 3,300g

b. 520g

c. 2g

7. Convert to grams.

a. 5kg

b. 0.07kg

c. 3.202kg

8. Convert to millimetres.

a. 50cm

b. 2m

c. 0.3cm

9. Convert to centimetres.

a. 33mm

b. 5.2m

c. 0.038km

10. Define the prefixes

milli-
kilo-
centi-

11. Convert to metres.

a. 240mm

b. 82cm

c. 7.9km

12. Convert to kilometres.

a. 5,800cm

b. 3,276m

c. 470m

13. Torin says $2,540\text{g} = 254\text{kg}$.

Explain the mistake.



Challenge

14. Match the conversion with the method you would use to convert.

Convert g into kg

 $\div 10$

Convert m into mm

 $\times 100$

Convert m to cm

 $\div 100$ $\times 1,000$

Convert mm to cm

 $\div 1,000$ You might want
to talk to an adult

Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{3}{4} \times \frac{2}{5}$	$\frac{6}{20}$ or $\frac{3}{10}$
2	$4 - 0.76$	3.24
3	0.5×28	14
4	$2\frac{1}{2} \times 5$	$12\frac{1}{2}$
5	What does 'metric' mean?	There are two different types of units of measure: metric and imperial. Metric measures are commonly used in the UK. Metric measures follow base ten, imperial measures do not.
6	Convert to kilograms.	a. 3.3kg, b. 0.52kg, c. 0.002kg
7	Convert to grams.	a. 5,000g, b. 70g, c. 3,202g
8	Convert to millimetres.	a. 500mm, b. 2,000mm, c. 3mm
9	Convert to centimetres.	a. 3.3cm, b. 520cm, c. 3,800cm
10	Define the prefixes milli-, kilo-, centi-	Milli- and kilo- means one thousand. Centi- means one hundred.
11	Convert to metres.	a. 0.24m, b. 0.82m, c. 7,900m
12	Convert to kilometres.	a. 0.058km, b. 3.276km, c. 0.47km
13	Explain the mistake.	Torin has not divided 2,540g by 1,000 to find the equivalent kilograms. The answer should be 2.54kg
14	Match the conversion with the method you would use to convert.	Convert g into kg - $\div 1,000$ Convert m into mm - $\times 1,000$ Convert m to cm - $\times 100$ Convert mm to cm - $\div 10$

Arithmetic

1. $\frac{4}{9} \times \frac{1}{3}$

2. $5 - 2.46$

3. 0.2×30

4. $1\frac{1}{5} \times 3$

Practice: Miles and Kilometres

5. Recap: Explain what the $\approx$ symbol means.

6. What are the missing numbers?

a. 5 miles $\approx$? kilometresb. 8 kilometres $\approx$? miles

7. What are the missing numbers?

a. 1 mile $\approx$? kmb. 1 km $\approx$? miles

8. Convert to miles.

a. 4km

b. 16km

c. 80km

9. Convert to km.

a. 50 miles

b. 15 miles

c. 25 miles

10. Explain how to convert 10 miles to kilometers.



11. Put in ascending order of size.

1 mile

1 km

 $\frac{1}{2}$ mile

12. Put in descending order of size.

3km

2 miles

2km

13. If 5 miles $\approx$ 8 kilometres then 15 miles $\approx$ 18 kilometres.

Is this correct?

Challenge

14. 5 children were raising money by running each day.

Myron ran 6 miles

Aston ran 2.5 miles

Raihan ran 8km

Osama ran 4.8km

Huxley ran 4 miles

Calculate the total distance they ran in:

a. miles

b. kilometres

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to talk to an adult

Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{4}{9} \times \frac{1}{3}$	$\frac{4}{27}$
2	$5 - 2.46$	2.54
3	0.2×30	6
4	$1\frac{1}{5} \times 3$	$\frac{18}{5}$ or $3\frac{3}{5}$
5	Explain what the $\approx$ symbol means.	The $\approx$ symbol means roughly equal to or approximately equal to.
6	What are the missing numbers?	a. 8, b. 5
7	What are the missing numbers?	a. 1.6, b. $\frac{5}{8}$ or 0.625
8	Convert to miles.	a. 2.5, b. 10, c. 50
9	Convert to km.	a. 80, b. 24, c. 40
10	Explain how to convert 10 miles to kilometers.	As 5 miles $\approx$ 8 kilometres, 10 miles would be $\approx$ 16 kilometers. To work this out, pupils need to be able to see the relationship between 5 miles and 10 miles (10 is double 5) and apply this to the kilometres (by also doubling them).
11	Put in ascending order of size.	$\frac{1}{2}$ mile, 1 km, 1 mile
12	Put in descending order of size.	2 miles, 3 km, 2 km
13	If 5 miles $\approx$ 8 kilometres then 15 miles $\approx$ 18 kilometres. Is this correct?	This is incorrect. Instead of understanding that 5 miles has been multiplied by 3 to make 15 miles, the assumption has been made that 10 miles have been added. This had led to the understanding that 10 should be added to both sides. The correct answer is 15 miles $\approx$ 24 kilometres
14	Calculate the total distance they ran in: a. miles b. kilometres	Myron - 6 miles or 9.6km Aston - 2.5 miles or 4km Raihan - 5 miles or 8km Osama - 3 miles or 4.8km Huxley - 4 miles or 6.4km a. 20.5 miles b. 32.8km