White Rose Answers (Year 6)

Monday

Simplify fractions



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	1					ı										
	1/2				1/2											
1/3				1/3 1/3												
	<u>1</u> 4					1 4					1/4	Ì			1/4	
$\frac{1}{5}$ $\frac{1}{5}$		-	1 5		<u>1</u> 5	1	T		<u>1</u> 5							
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1 10	1	0	1	0	10	- T	10	5	1 10	5	1 10	-	<u>1</u>		10	1 10

Use the fraction wall to write each fraction in its simplest form.

a)
$$\frac{4}{6} = \frac{2}{3}$$

c)
$$\frac{6}{8} = \frac{3}{4}$$

b)
$$\frac{8}{10} = \frac{4}{5}$$

d)
$$\frac{4}{8} = \frac{1}{2}$$

2) a) Use a fraction wall to explain why $\frac{7}{10}$ does not simplify.

It is already in its simplest form.

b) Find three more fractions on the fraction wall that cannot be simplified.

e.g. $\frac{2}{3}$

3 7

9/0

3 Mo, Eva and Ron are trying to simplify $\frac{5}{20}$

(0)

I can't simplify
this because one number
is odd and the other
is even.

Mo

I can't simplify
this because only one number
can be halved.



Eva



I can simplify any fraction.

Ron

Do you fully agree, partly agree or completely disagree with each person?

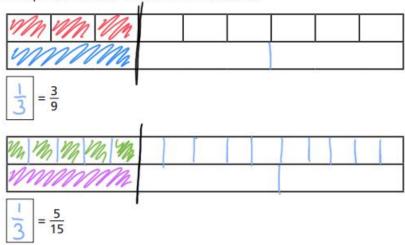
Talk to a partner.







b) Complete each bar model and calculation.



Simplify the fractions.

a)
$$\frac{4}{12} = \frac{1}{3}$$

b)
$$\frac{8}{12} = \frac{2}{3}$$

c)
$$\frac{40}{120} = \frac{1}{3}$$

d)
$$\frac{12}{4} = 3$$

$$\frac{4}{16} = \boxed{\frac{1}{4}}$$

$$\frac{8}{16} = \frac{1}{2}$$

$$\frac{40}{160} = \frac{1}{4}$$

$$\frac{120}{4} = 30$$

$$\frac{4}{20} = \boxed{\frac{1}{5}}$$

$$\frac{8}{20} = \frac{2}{5}$$

$$\frac{40}{200} = \frac{1}{5}$$

$$\frac{12}{400} = \frac{3}{100}$$

Describe and explain any patterns that you noticed.

Write 3 fractions that simplify to $\frac{3}{5}$

Teddy and Dora are both simplifying $\frac{30}{42}$

$$\frac{30}{42} = \frac{15}{21} = \frac{5}{7}$$

$$\frac{30}{42} = \frac{5}{7}$$

a) How do you think Dora was able to simplify the fraction in one step?

b) Simplify these fractions in one step.

$$\frac{24}{30} = \frac{4}{5}$$

$$\frac{16}{20} = \frac{14}{5}$$

$$\frac{56}{64} = \frac{7}{8}$$

$$\frac{99}{121} = \frac{9}{11}$$





is a prime number. is a multiple of 10



The fraction can be simplified.

What could each number be? Explain your reasoning.

and
$$\frac{2}{20} = \frac{1}{10}$$

so star could be 2 and heart could be 20



Tuesday

Compare and order (denominator)

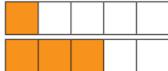




Write <, > or = to compare the fractions.

Use the bar models to help you.





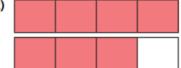


























- f) What do you notice about your answers?
- g) Complete the sentence.

When the denominators are the same, the greater

the numerator, the <u>greater</u> the fraction.



a) Colour the bar models to show the fractions.











b) Use the bar models to sort these fractions in order from greatest to smallest.

10



greatest

smallest

c) Order the fractions from smallest to greatest.









smallest

greatest

$$\frac{4}{15} = \frac{8}{30}$$
 $\frac{3}{10} = \frac{9}{30}$

 $\frac{9}{30}$ is greater than $\frac{8}{30}$

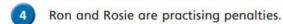
 $\frac{3}{10}$ is greater than $\frac{4}{15}$

Explain Amir's method.

Amir used equivalent tractions to find

common denominator and then

the numerators.



Ron scored 7 out of 10. Rosie scored 23 out of 30

I scored more than you, so I should take penalties for the school team.





I did not miss as many as you, so I should take the penalties.

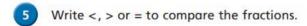
Compare fractions to explain who should take penalties for the school team.

$$\frac{7}{10} = \frac{21}{30}$$

$$\frac{23}{30} > \frac{2}{3}$$

Rosie should take

Denallies for the school team



a)
$$\frac{3}{4}$$
 $\frac{5}{6}$

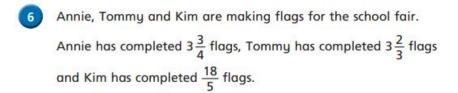
d)
$$\frac{3}{5}$$
 $\frac{5}{7}$

b)
$$\frac{2}{3}$$
 $\frac{5}{9}$

e)
$$\frac{9}{10}$$
 $\frac{3}{4}$

c)
$$\frac{2}{3}$$
 $\frac{7}{8}$

f)
$$\frac{9}{10}$$
 $\frac{19}{20}$



Who has completed the most flags?

$$\frac{18}{5} = 3\frac{3}{5}$$
 $\frac{3}{4} > \frac{2}{3} > \frac{3}{5}$

Annie has completed the most flags



Compare and order (numerator)



Use strips of paper to represent the fractions and complete the sentences.



a)

$$\frac{1}{3}$$
, $\frac{1}{5}$ and $\frac{1}{6}$

The smallest fraction is $\frac{1}{6}$

The greatest fraction is $\frac{1}{3}$



b)

$$\frac{2}{3}$$
, $\frac{2}{5}$ and $\frac{2}{6}$

The smallest fraction is

The greatest fraction is $\frac{2}{3}$



c)

$$\frac{3}{3}$$
, $\frac{3}{5}$ and $\frac{3}{6}$

The smallest fraction is $\frac{3}{6}$

The greatest fraction is $\frac{3}{3}$



d) What do you notice about your answers?

e) Complete the sentence.

When the numerators are the same, the arrate

the denominator, the _____ the fraction.



a) Colour the bar models to compare $\frac{3}{4}$ and $\frac{6}{10}$





b) Write <, > or = to complete the statement.

3	6
4	ī





Which is the greatest fraction? Circle your answer.





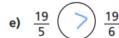
How do you know?

Write < or > to compare the fractions.



d)
$$\frac{11}{12}$$





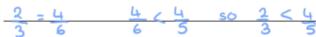
c)
$$\frac{3}{13}$$
 (3)

f)
$$\frac{107}{53}$$
 $<$ $\frac{1}{4}$





5	Explain how can you compare $\frac{2}{3}$ and $\frac{4}{5}$ using the same
	numerator rule.



Complete the sentence to compare $\frac{2}{3}$ and $\frac{4}{5}$

 $\frac{4}{5}$ is greater than $\frac{2}{3}$



Dani scored 5 out of 7

Compare their scores.

Explain who you think did best and why.

Scott:
$$20 = 5$$
 $5 > 5$ so Scott did better.

Dani: 5



- Write <, > or = to complete each statement.
 - a) $\frac{2}{5}$ () $1\frac{1}{3}$ b) $\frac{2}{5}$ () $\frac{6}{11}$ c) $3\frac{2}{3}$ () $\frac{11}{4}$

- $1\frac{2}{5}$ < $3\frac{6}{11}$

- $1\frac{2}{5}$ () $1\frac{1}{3}$ $3\frac{2}{5}$ () $3\frac{6}{11}$
- $\frac{12}{5} \left(< \right) \frac{12}{3} \qquad \frac{12}{5} \left(< \right) \frac{36}{11}$

Explain how you know when it is best to compare the numerators or denominators of two fractions.

When the lowest common multiple of either the

numerators or denominators is easier to sind.

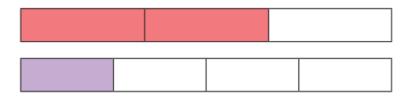


Wednesday

Add and subtract fractions (2)

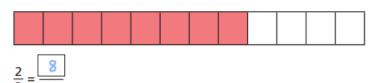


1 Amir is using fraction strips to work out $\frac{2}{3} + \frac{1}{4}$



Amir says he needs to find a common denominator.

a) Complete Amir's method.



$$\frac{1}{4} = \frac{3}{12}$$

$$\frac{2}{3} + \frac{1}{4} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}$$

b) Show the addition on the fraction strip.



c) Could you have used a different denominator?





What common denominator can you use to add the fractions?

a)
$$\frac{2}{5} + \frac{1}{2}$$
 Common denominator =

b)
$$\frac{2}{3} + \frac{4}{5}$$
 Common denominator =

c)
$$\frac{7}{8} - \frac{1}{4}$$
 Common denominator = 8

d)
$$\frac{7}{9} - \frac{1}{6}$$
 Common denominator =

e)
$$\frac{11}{15} + \frac{3}{10}$$
 Common denominator = 30

Ron and Eva are working out $\frac{1}{4} + \frac{5}{6}$

Ron's method

$$\frac{1}{4} + \frac{5}{6} = \frac{3}{12} + \frac{10}{12} = \frac{13}{12}$$

$$\frac{1}{4} + \frac{5}{6} = \frac{6}{24} + \frac{20}{24} = \frac{26}{24}$$

a) What is the same about Ron's and Eva's methods?

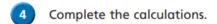
They both found a common denominator.

b) What is different about their methods?

They used a different common denominator.

c) Which method do you prefer? Why?







a)
$$\frac{1}{5} + \frac{3}{4} = \boxed{\frac{19}{20}}$$

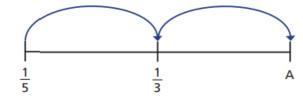
c)
$$\frac{1}{2} - \frac{1}{7} = \frac{5}{14}$$

b)
$$\frac{7}{8} - \frac{1}{3} = \frac{13}{24}$$

d)
$$\frac{11}{18} + \frac{7}{12} = \frac{7}{36}$$

Mo is drawing jumps on a number line.

The jumps are the same size.



a) What is the size of the jump?



b) What is the value of A?



Complete the bar model.

<u>5</u> 18	<u>1</u>	<u>5</u> 9

Complete the additions.

Give your answers as mixed numbers and as improper fractions.

a)
$$\frac{4}{5} + \frac{5}{4} = \begin{bmatrix} \frac{41}{20} \\ \frac{1}{20} \end{bmatrix} = \begin{bmatrix} 2 & \frac{1}{20} \end{bmatrix}$$

c)
$$\frac{9}{8} + \frac{8}{9} = \boxed{\frac{145}{72}} = \boxed{2\frac{1}{72}}$$

b)
$$\frac{2}{3} + \frac{3}{2} = \boxed{\frac{13}{6}} = \boxed{\frac{2}{6}}$$
 d) $\boxed{\frac{2}{15}} = \boxed{\frac{3!4}{15}} = \frac{5}{3} + \frac{5}{15}$

What patterns do you notice?



$$\frac{1}{2} + \frac{1}{3} = \boxed{ }$$

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{4} = \boxed{ }$$

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{4} =$$

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} =$$

a) When does this pattern first give an answer greater than 2?

b) Do you think the pattern will ever give an answer greater than 100?







Thursday

Mixed addition and subtraction



Work out the calculations.

a)
$$\frac{2}{5} + \frac{3}{4} = \frac{3}{20}$$

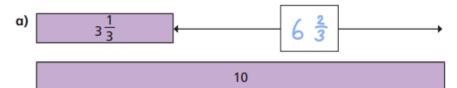
b)
$$2\frac{1}{4} - \frac{2}{3} = \frac{7}{12}$$

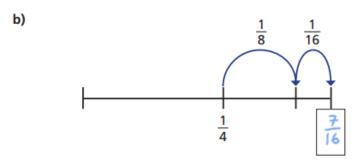
c)
$$3\frac{7}{10} - 2\frac{1}{4} = \frac{9}{20}$$

Complete the calculation.

$$\frac{5}{6} + 1\frac{2}{9} - \frac{1}{2} = \boxed{\frac{5}{9}}$$

Work out the missing fractions.





Complete the calculations.

a)
$$\frac{2}{5} + \frac{1}{5} + \boxed{\frac{2}{5}} = 1$$

b)
$$\frac{2}{5} + \frac{1}{5} + \boxed{\frac{9}{10}} = 1\frac{1}{2}$$

c)
$$\frac{2}{5} + \frac{1}{5} + \left| \frac{11}{15} \right| = \frac{4}{3}$$

d)
$$\frac{4}{5} = \left| \frac{3}{5} \right| - \frac{4}{5}$$

Which of these are true and which are false?

Can you decide without having to do the additions or the subtractions?

Talk about your reasons with a partner.

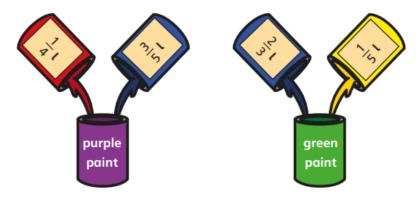
	True or false?
$2\frac{1}{3} + 3\frac{3}{4}$ is equal to $3\frac{1}{3} + 2\frac{3}{4}$	True
$3\frac{3}{4} - \frac{1}{3}$ is less than $4\frac{3}{4} - 1\frac{1}{3}$	False
$3\frac{3}{4} - 2\frac{1}{3}$ is equal to $3\frac{1}{3} - 2\frac{3}{4}$	False

6 Complete the addition grid.

1 1/4	2 10	<u>1</u>	$= 3\frac{3}{5}$
<u>1</u> 25	1 3/20	2 5	= 3 <u>39</u> 100
3==	1 1 50	1 3 100	$=5\frac{9}{20}$
			-
4 69	4 27	3 = 12	

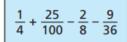
7 A painter uses the following mixtures.

How much more green paint does she have than purple paint?





8 Eva and Amir are working out this calculation.





This is going
to be very difficult, because
I can't find a common
denominator.



I have found an easier way.

Find Amir's solution. Explain how this calculation can be solved.

Au cour	cractions	ore	equivalent.	to 1 30	the
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White Rose Answers (Year 5)

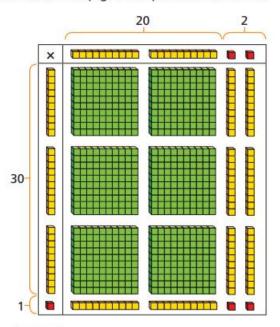
Monday

Multiply 2-digits (area model)



1) Kim is using base 10 to work out 31 × 22

Use Kim's model to help you complete the sentences.



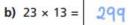
There are 2 ones altogether.

There are 8 tens altogether.

There are 6 hundreds altogether.





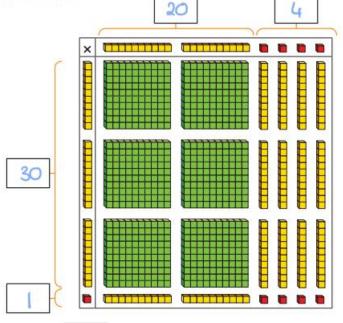




Amir is using base 10 to calculate 31 × 24







There are 4 ones altogether.

There are | | tens altogether.

There are 6 hundreds altogether.

b) Describe any exchanges you need to make.



c) Complete the multiplication.





Use the place value counters to complete the multiplication grid and sentence.

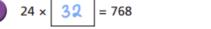
0	100 100	
0	100 100	000000
0	100 100	
1	000	
1	100	

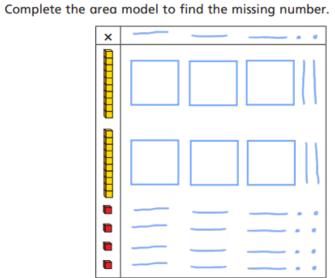
×	20	6
30	600	180
2	40	IQ

Use an area model to help you complete the multiplication.

×	20	8
10	200	80
4	80	32

Complete the multiplications.









How many different answers can you find?

Various answers

How many products are there between 1,000 and 1,500?







Tuesday

Multiply 4-digits by 2-digits



Complete the multiplication.

		1	2	3	4	
×				2	1	
		1	2	3	4	
	2	4	6	8	0	
	2	5	9	1	4	
			1			

- Tommy is calculating 1,234 x 26
 - a) Complete his working out.

		1	2	3	4	
×				2	6	
		7,	42	02	4	
	2	4	6	8	0	
	3	2	0	8	4	
	1	(

b) Fill in the grid to check Tommy's working is accurate. You may use place value counters to help.

×	1,000	200	30	4
20	20,600	4,000	600	80
6	6,000	1,200	180	24



Rosie is calculating 2,541 × 42
Here is Rosie's working.

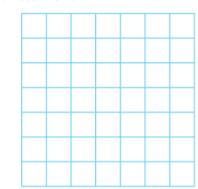
		2	5	4	1	
	×			4	2	
		4,	0	8	2	(2,541 × 2)
		82	0,	6	4	$(2,541 \times 40)$
	1,	2	1,	4	6	
L						

a) Rosie has made two mistakes. What are they?

She hasn't correctly exchanged.

She has multiplied by 4 not 40

b) What is the correct answer?



106,722

Work out the multiplications.

a)
$$4,284 \times 23$$

	4	2	8	4			2	١	4	२		
×			2	3		X			ч	6		
1	2	28	ຸຣ	2]	2	ß	5	2		
8	5	6	8	0		જ	5	6	ક	O		
9	8	5	3	2		9	8	5	3	2		
	1	1					١	1				

What do you notice?



(5) A	machine	makes	2,734	boxes	every	hou

The machine works for 3 hours each day.

a) How many boxes will it make in 12 days?

98,424

b) Compare methods with a partner. Were there any other ways you could have worked out the answer?



6 Work out 378 × 7 × 12

Show your method clearly.



31,752

7	1 2 3 4 5 6
	×
	a) Using all the digit cards, create 4 different calculations and work out the answer to each.
	Various answers.
	b) Write your answers in ascending order.
	c) What is the smallest product that can be made? $\boxed{31,928}$
8	Amir scores 4,680 points in a computer game for 12 games in a row.
	Whitney scores 2,512 points every game for 24 games.
	Who scores more points?
	Amir: 56,160
	Whitney: 60,288
	How many more?

Wednesday

Divide with remainders



1

a) Circle the groups of 3 to help complete the sentences and calculation.

The first step has been done for you.

Th	Н	Т	0
1300			00 00 00

	1	3	-	2	r 2
3	3	9	3	8	

There is 1 group of 3 thousands.

There are 3 groups of 3 hundreds.

There is group of 3 tens.

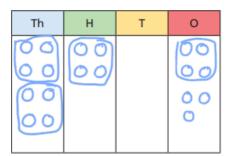
There are 2 groups of 3 ones.

There are 2 ones left over.

 $3,938 \div 3 = 1,3[2]$ remainder



b) Use place value counters to work out $8,407 \div 4$



	2	١	0	l	ړځ
4	8	4	0	7	

$$8,407 \div 4 = 2,101$$
 remainder 3

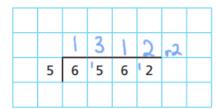
2 a)

a) Complete the divisions.

Use place value counters to help you.

	2	5	3	1	ړ2	
3	7	¹ 5	9	5		

	2	1	4	1	رع	
4	8	5	' 6	7		



	1	3	1	ı	۲2	
3	3	9	3	5		

b) Write <, > or = to complete the statements.





Write the calculations in the correct column of the table.

5,066 ÷ 4

9,513 ÷ 4

1,234 ÷ 4

6,562 ÷ 4

6,563 ÷ 4

9,515 ÷ 4

Remainder of 1	Remainder of 2	Remainder of 3	Remainder of 4
9,513 +4	5066÷ 4	6563÷4	
	6,562 +4	9,515÷4	
	1,234 +4		
	•		

Are any columns empty? Talk to a partner about why this has happened.

7,816

7,861

6,781

1,786

I know that if I divide these numbers by 5 the remainder will be 1



Is Eva correct? <u>Yeo</u>

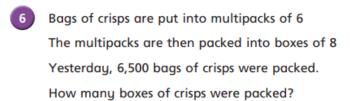
How do you know?

There are 459 children in a school.

They are sitting at tables in groups of 7

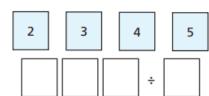


Do you agree with Mo? NO Explain your answer.



135

7



a) How many ways can you complete the calculation using all the digit cards so that there is a remainder of 1?

- b) What do you notice?
- 8 Dora is thinking of a number between 500 and 600
 When she divides it by a 1-digit number it has a remainder of 4
 What could Dora's number be?















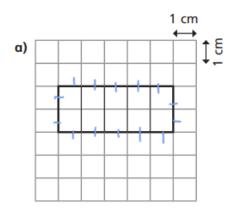


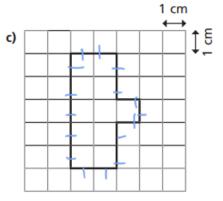
Thursday

Calculate perimeter



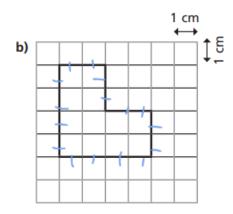
Calculate the perimeter of each shape.

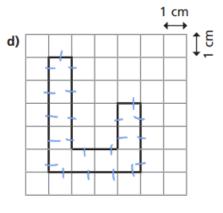




14 cm

16 cm

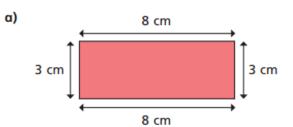




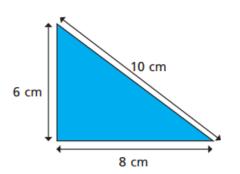
16 am

22 cm

Calculate the perimeter of these shapes.



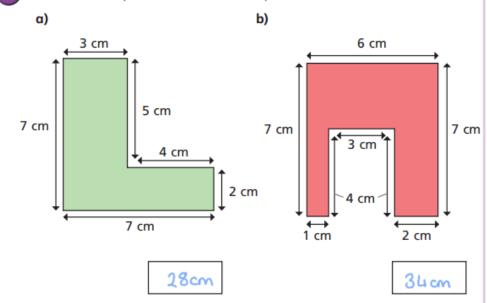
b)



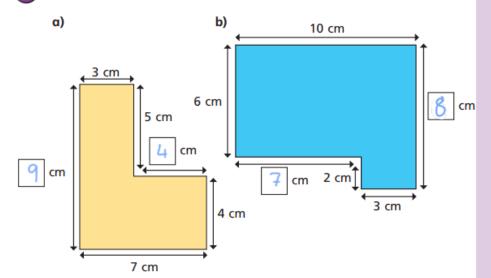
24cm

22cm

Calculate the perimeter of these shapes.

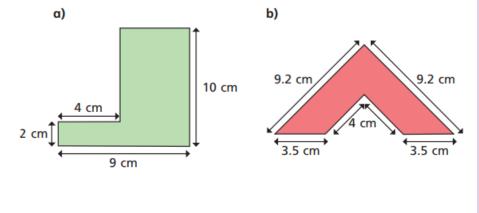


Work out the missing lengths on these shapes.



Discuss with a partner how you worked them out.



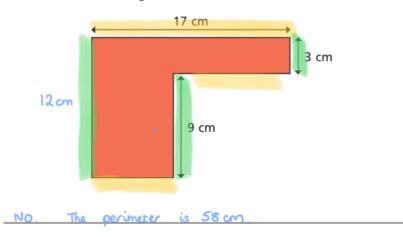


380m

33-4cm

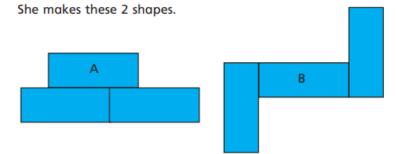
Mo thinks that there is not enough information to calculate the perimeter of the shape.

Is he correct? How do you know?



Rosie is making shapes made up of 3 rectangles.

Each rectangle has a length of 10 cm and a width of 4 cm.



- b) What other shapes can you make with 3 rectangles?What is the perimeter of the shapes?







Dip and Pick 14 Answers

£51.36 = 20%

£25.68 = 10%

 $£25.68 \times 10 = £256.80$

One possible approach...

The sale price was 17.5% off the normal price.

With £200 to spend:

Dress £43.60	Trousers £15.52			
1	10			
2	7			
3	4			
etc.				

£54.50

10% = £5.4520% = £10.90

£54.50 - £10.90= £43.60 £10.90 saved on the dress.

£19.40

10% = £1.94

20% = £3.88

Total amount saved = £10.90 + £3.88 = £14.78

£10.90 saved on the dress.

£19.40

10% = £1.94

20% = £3.88

Total amount saved = £10.90 + £3.88 = £14.78

Amy was correct.

She spent a total of £163.50.

10% = £16.35

Double this would be over £30.

Reading Answers

Answers to 'Leon and the Place Between'

Summarising

Who is the main character?

Leon

What can we tell about the main character from the front cover and the extract?

I can tell that Leon loves magic because of his eager anticipation for the magic to start e.g. "Now", said Leon edging forward in the dark. "Now it's going to happen". This is also shows us that Leon is excited for the arrival of Abdul Kazam, as he edges forward in the dark showing that he is more interested now in what is about to happen. From the front cover, you could predict that Leon enjoys doing magic himself as he is holding a white rabbit, a common prop in a magic show!

Where is the story set?

In a circus tent

Which other characters are in the story?

The solemn monkey and Abdul Kazam.

What might these characters be like?

The solemn monkey appears to take his job in the circus very seriously as he took 'a stiff bow'. His solemn ways and stiff bow make him seem an unfriendly character.

Addul Kazam is more intriguing! He is mysterious. He appears to really be able to do magic as 'Leon could smell the magic'. He may end up teaching Leon magic.

Quick Quiz

- 1. What does 'edging forward in the dark' tell you about how Leon is feeling?

 Leon is very eager for the magic show to start. He is excited and focussed. This is the part he is most interested in.
- 2. What word could you use instead of 'solemn' to describe the monkey?

 Serious (other ideas: serious · earnest · grave · sober · sombre · unsmiling · poker-faced · stern · grim · dour · humourless · glum · gloomy · moody · stony-faced · thoughtful)
- 3. What types of toys are in the tent? Mechanical toys
- 4. How do these toys move? Clockwork

Answers to 'Diary From the Beagle'

Inference Focus

- 1. He thought it might be cursed, he was desperate to land and walk on solid ground
- 2. Happy to be on land but disappointed by what he found
- 3. It is a lush tropical place with lots of animals and colour
- 4. He was distracted and amazed by everything he was seeing

VIPERS questions

- V: Unfortunately
- S: They were quarantined offshore
- V: Deprived or lacking something
- E: The use of old-fashioned language like alas, nevertheless, glory, shall. His amazement at finding creatures in the sea, which they wouldn't have known then.
- S: Madeira

Answers to 'Robyn Hood'

VIPERS questions

- V: She was very good at it
- R: Made fun, laughed and sniggered
- I: She's brave and a trouble-maker
- E: Rumour and gossip and exaggerations of their feats across the land
- I: He was angry he focussed on his vengeance