3.2 Fractions: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

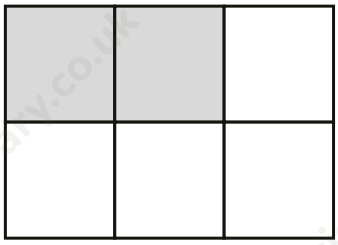
1 Work out 3/8 + 2/8. Give your answer in its simplest form.

(Total for Question 1 is 1 mark)

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2 Write the fraction shown by the shaded part of this shape. A rectangle is split into 6 equal small rectangles; 2 of them are shaded.

Diagram NOT accurately drawn



(Total for Question 2 is 1 mark)

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3 Write 4 1/3 as an improper fraction.

(Total for Question 3 is 1 mark)

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4 Find 3/4 of 2/5 of 100.

(Total for Question 4 is 3 marks)

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5 Compare the fractions 5/9 and 7/12. You must show your working, and write < , > or = between the two fractions.

(Total for Question 5 is 2 marks)

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6 Maya spends 3/8 of her wages on rent. She then spends 2/3 of the money she has left on clothes.
What fraction of her wages does Maya have left? Give your answer in its simplest form.

(Total for Question 6 is 3 marks)

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7 In a survey of 240 people, 3/5 said they prefer tea to coffee.

(a) Work out how many people prefer tea to coffee. **(2)**

(b) Of the people who prefer tea, 25% take their tea with no sugar. Work out how many of the tea drinkers take their tea with no sugar. **(2)**

(Total for Question 7 is 4 marks)

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8 Sam paints 3/5 of a fence in the morning. In the afternoon he paints 1/4 of the remaining part.
What fraction of the whole fence has Sam painted by the end of the day?

(Total for Question 8 is 3 marks)

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9 Simplify the fraction 18/24.

(Total for Question 9 is 1 mark)

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10 Convert the recurring decimal 0.272727... (the digits 27 repeat forever) to a fraction in its simplest form. You must show your working.

(Total for Question 10 is 3 marks)

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11 Show that 7/9 ÷ 14/27 = 3/2.

(Total for Question 11 is 4 marks)

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12 Amelia uses 1 1/2 packets of sugar to make 3 batches of cookies. How much sugar does she use for one batch? Give your answer as a fraction.

(a) Write 1 1/2 as an improper fraction. **(2)**

.....

(b) Divide 3/2 by 3 and give the answer in simplest form. **(4)**

.....

(Total for Question 12 is 6 marks)

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13 Simplify the algebraic expression $(2/3)x - (1/6)x$.

(Total for Question 13 is 2 marks)

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14 Solve the equation $(2x + 1)/3 - (x - 2)/4 = 5/6$. Give your answer as a fraction or integer.

(Total for Question 14 is 3 marks)

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15 Priya has 10 1/2 metres of ribbon. She cuts off 1/4 of it. From the remaining ribbon she uses 3/5 for making bows. How much ribbon remains unused? Give your answer as a mixed number in simplest form.

(Total for Question 15 is 5 marks)

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16 This question has two parts.

(a) Show that $1/(1 + a) + 1/(1 - a) = 2/(1 - a^2)$. **(3)**

(b) Hence or otherwise, find the value of the expression when $a = 1/3$. **(1)**

(Total for Question 16 is 4 marks)

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Mark scheme · 3.2 Fractions: Test Pack

Question 1

5/8 cao **B1**

Answer: 5/8

Question 2

2/6 cao **B1**

Answer: 2/6

Question 3

13/3 cao **B1**

Answer: 13/3

Question 4

multiply fractions: 3/4 × 2/5 shown **M1**

apply result to 100, e.g. (3/4 × 2/5) × 100 shown **M1**

30 cao **A1**

Answer: 30

Question 5

20/36 and 21/36 oe (common denominator of 36 used, or equivalent decimal method) **M1**

cao, 5/9 < 7/12 **A1**

Answer: 5/9 < 7/12

Question 6

1 - 3/8 = 5/8 **M1**

2/3 of the remainder or 1/3 x 5/8 **M1**

5/24 cao **A1**

Answer: 5/24

Question 7

(a) 240/5 = 48 oe (dividing by the denominator) **M1**

(a) 144 cao **A1**

(a) Answer: 144

(b) 144/4 oe (ft from part (a); 25% of 144, e.g. 0.25 x 144) **M1**

(b) 36 cao **A1**

(b) Answer: 36

Question 8

calculate remaining after morning, 1 - 3/5 = 2/5 and find 1/4 of this, 1/4 × 2/5 **M1**

add morning and afternoon amounts, e.g. 3/5 + 1/10 shown **M1**

7/10 cao **A1**

Answer: 7/10

Question 9

3/4 cao **B1**

Answer: 3/4

Question 10

x = 0.272727..., then 100x = 27.272727... (multiplying by 100, since 2 digits repeat) **M1**

100x - x = 27, so 99x = 27 oe **M1**

3/11 cao (simplest form) **A1**

Answer: 3/11

Question 11

rewrite division as multiplication by reciprocal, e.g. 7/9 × 27/14 **M1**

cancel common factors correctly, e.g. 27/9 = 3 and 7/14 = 1/2 **M1**

multiply remaining numerators and denominators, e.g. 3 × 1 over 1 × 2 or equivalent **M1**

3/2 cso **A1**

Answer: 3/2

Question 12

(a) convert mixed number to improper fraction shown **M1**

(a) 3/2 cao **A1**

(a) Answer: 3/2

(b) method: divide by 3 is multiply by 1/3, so (3/2) x (1/3) **M1**

(b) cancellation or multiplication to get 3/6 **M1**

(b) 1/2 cao **A1**

(b) working or simplified result shown **B1**

(b) Answer: 1/2

Question 13

find common coefficients: 4/6 x - 1/6 x or equivalent **M1**

1/2 x cao **A1**

Answer: 1/2 x

Question 14

clear denominators by multiplying by 12 to get 4(2x+1) - 3(x-2) = 10 or equivalent **M1**

collect terms: 8x+4 -3x+6 = 10 => 5x +10 =10 **M1**

x = 0 cao **A1**

Answer: 0

Question 15

convert 10 1/2 to improper fraction 21/2 **M1**

find amount removed: 1/4 × 21/2 = 21/8 and find remainder 21/2 - 21/8 = 63/8 **M1**

find amount used for bows: 3/5 × 63/8 = 189/40 **M1**

subtract used from remainder: 63/8 - 189/40 = 63/20 **M1**

3 3/20 cao **A1**

Answer: 3 3/20

Question 16

(a) write common denominator (1+a)(1-a) and combine numerators, e.g. $(1-a + 1+a)/(1-a^2)$ or equivalent **M1**

(a) simplify numerator to 2 **M1**

(a) $2/(1-a^2)$ cao (cso) **A1**

(a) Answer: $2/(1-a^2)$

(b) 9/4 cao **B1**

(b) Answer: 9/4

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