KS2.M-Y6N3 Fractions: All Four Operations

Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Calculate 3/8 + 2/8.

(1)

2 Work out 4 1/3 - 2 2/3. Show any subtraction of the fractional parts.

(2)

3 Add 7/12 and 1/4. Give your answer in simplest form.

(2)

4 Write 12/18 in its simplest form.

(1)

5 Calculate 5 x 3/10.

(1)

6 Work out 2/3 x 3/5. Give your answer in simplest form.

(2)

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7 Divide 3/4 by 3. Show your method.

(2)

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8 Work out 2/5 ÷ 4/15. Give your answer in simplest form.

(2)

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9 A cake recipe needs 3/4 of a cup of sugar and 2/3 of a cup of flour. How many cups of these two ingredients are needed in total? Give your answer in fractions and simplest form.

(3)

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10 Subtract 5/6 from 2. Give your answer as a mixed number if needed.

(2)

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11 Find the missing numerator: ?/16 = 5/8. Write your answer as a whole number.

(2)

12 Which is larger, 7/10 or 3/4? Explain your answer showing any working.

(2)

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13 Write 11/4 as a mixed number.

(1)

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14 A bottle is 3/5 full of juice. You add another 4/7 of the bottle. Is the bottle more than full? Work out the total and give your answer in simplest form.

(3)

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15 Is 2/3 + 1/4 greater than 1? Explain your answer clearly.

(2)

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16 Calculate (6/9) x (3/8). Simplify your answer.

(2)

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17 Work out 5 1/2 - 2 7/10. Give your answer in simplest form.

(2)

18 Sam has a pizza. He eats 2/5 of it. His friend eats 1/3 of the remaining pizza. How much of the whole pizza have they eaten altogether? Show your working and give the answer in simplest form.

(3)

Mark scheme · KS2.M-Y6N3 Fractions: All Four Operations

Question 1

- **B1** 5/8 cao
- Answer: **5/8**

Question 2

- **M1** correct conversion or borrowing for the mixed-number subtraction, e.g. 4 1/3 = 3 4/3 then 3 4/3 - 2 2/3 = 1 2/3
- **A1** 1 2/3 cao
- Answer: **1 2/3**

Question 3

- **M1** correct common denominator work, e.g. 1/4 = 3/12 and 7/12 + 3/12 = 10/12
- **A1** 5/6 cao
- Answer: **5/6**

Question 4

- **B1** 2/3 cao
- Answer: **2/3**

Question 5

- **B1** 15/10 or 3/2 accepted; 3/2 cao
- Answer: **3/2**

Question 6

- **M1** correct multiplication of numerators and denominators, or cancellation first, e.g. 2/3 x 3/5 = (2x3)/(3x5)
- **A1** 2/5 cao
- Answer: **2/5**

Question 7

- **M1** method using reciprocal or dividing numerator by 3, e.g. 3/4 x 1/3 or (3/4) ÷ 3 = 3/12
- **A1** 1/4 cao
- Answer: **1/4**

Question 8

- **M1** correct use of reciprocal: 2/5 x 15/4 or equivalent cancellation
- **A1** 3/2 or 1 1/2 cao
- Answer: **3/2**

Question 9

- **M1** correct common denominator work, e.g. 3/4 = 9/12, 2/3 = 8/12, then add to 17/12
- **A1** 1 5/12 cao
- **B1** answer expressed in simplest form or as mixed number
- Answer: **1 5/12**

Question 10

- **M1** correct conversion or subtraction: 2 = 1 6/6, 1 6/6 - 5/6 = 1 1/6
- **A1** 1 1/6 cao
- Answer: **1 1/6**

Question 11

- **M1** understands scaling: 8 -> 16 is x2 so numerator 5 x 2 = 10, or uses equivalent fraction method
- **A1** 10 cao
- Answer: **10**

Question 12

- **M1** correct method to compare, e.g. convert to common denominator 7/10 = 28/40, 3/4 = 30/40 or convert to decimals
- **A1** 3/4 is larger with correct reason (30/40 > 28/40) cao
- Answer: **3/4 is larger**

Question 13

- **B1** 2 3/4 cao
- Answer: **2 3/4**

Question 14

- **M1** correct common denominator or conversion, e.g. 3/5 = 21/35, 4/7 = 20/35 then add to 41/35
- **A1** 41/35 or 1 6/35 cao
- **B1** explicit yes, the bottle is more than full
- Answer: **1 6/35**

Question 15

- **M1** shows correct addition to a common denominator, e.g. 2/3 = 8/12, 1/4 = 3/12, total 11/12
- **A1** 11/12 < 1 so answer is No, with reason cao
- Answer: **No, it is 11/12**

Question 16

- **M1** correct multiplication with cancellation, e.g. cancel 6/9 to 2/3 then 2/3 x 3/8 = 2/8
- **A1** 1/4 cao
- Answer: **1/4**

Question 17

- **M1** convert to improper fractions or to common denominator: 5 1/2 = 11/2, 2 7/10 = 27/10, convert to twentieths: 11/2 = 110/20, 27/10 = 54/20, then subtract
- **A1** 56/20 = 14/5 or 2 4/5 cao
- Answer: **2 4/5**

Question 18

- **M1** correctly finds remaining pizza after Sam: 1 - 2/5 = 3/5, then finds 1/3 of 3/5 = 1/5
- **M1** adds amounts eaten: 2/5 + 1/5 = 3/5
- **A1** 3/5 cao
- Answer: **3/5**