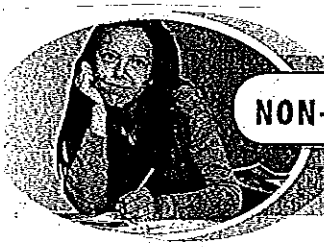

NON-CALCULATOR ✕ Advanced level questions

25 MIN

Mini Test 21: Fractions and Percentages

1 Which is halfway between $2\frac{1}{5}$ and $2\frac{1}{3}$?

A 2 **B** $2\frac{1}{4}$ **C** $2\frac{4}{15}$ **D** $2\frac{1}{2}$

2 A packet of mixed sweets is made up of jellies, butterscotch and mints. $\frac{2}{5}$ of the sweets are jellies and $\frac{1}{4}$ are mints. What fraction of the sweets is butterscotch?

A $\frac{1}{3}$ **B** $\frac{7}{20}$ **C** $\frac{2}{3}$ **D** $\frac{3}{10}$

3 There are 240 pets at a pet motel. One-quarter of the pets are cats and the rest are dogs. 30% of the dogs are Labradors. How many Labradors are at the pet motel?

A 18 **B** 36 **C** 54 **D** 72

4 Which set of fractions is arranged from lowest to highest?

A $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{7}{10}$ **B** $\frac{2}{3}, \frac{7}{10}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$

C $\frac{7}{10}, \frac{4}{5}, \frac{5}{6}, \frac{2}{3}, \frac{3}{4}$ **D** $\frac{7}{10}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$

5 $1\frac{2}{3} \times \frac{4}{5} = ?$

A $1\frac{8}{15}$ **B** $2\frac{7}{15}$ **C** $2\frac{1}{5}$ **D** $1\frac{1}{3}$

6 Which fraction is **not** equal to $\frac{2}{5}$?

A $\frac{4}{25}$ **B** $\frac{12}{30}$ **C** $\frac{16}{40}$ **D** $\frac{28}{70}$

7 Leo asked 200 people which of four sports they preferred to watch on television. The table shows the results.

Sport	Cricket	Swimming	Netball	Football
Number	39	51	42	

What percentage preferred football? ____ %

8 Which has the same value as $\frac{13}{4}$?

A $3\frac{1}{4}$ **B** $3\frac{3}{4}$ **C** $4\frac{1}{4}$ **D** $4\frac{3}{4}$

9 15% of all students received top marks in an exam. $\frac{2}{3}$ of all students who achieved top marks were girls. If 180 students sat for the exam, how many girls got top marks? ____

10 Last week Dave's cows produced 25 000 litres of milk. This week they produced 25 500 litres. What percentage increase is this?

A 2% **B** 5% **C** 12.5% **D** 20%

11 A club has 320 members. 50 of the members are in the club today. The fraction of members who are in the club today is closest to

A $\frac{1}{3}$ **B** $\frac{1}{4}$ **C** $\frac{1}{5}$ **D** $\frac{1}{6}$

12 $\frac{2}{3}$ of a number is 24. What is $\frac{3}{4}$ of the number? ____

13 In 1983, Cameron celebrated his twenty-first birthday. On the same day, his niece Amy was also celebrating her birthday. Amy was $\frac{1}{3}$ of Cameron's age. On their birthday in 2011, what fraction of Cameron's age is Amy?

A $\frac{1}{3}$ **B** $\frac{4}{5}$ **C** $\frac{2}{3}$ **D** $\frac{5}{7}$

14 Which number is the largest?

A $\frac{1}{3}$ **B** $\frac{3}{8}$ **C** $\frac{5}{12}$ **D** $\frac{7}{24}$

15 $15 \div \frac{1}{3} = ?$

A 5 **B** 10 **C** 30 **D** 45

16 A recipe for Anzac biscuits uses $\frac{3}{4}$ cup of coconut. This recipe makes three dozen biscuits. Georgia wants to make four dozen biscuits. How many cups of coconut should she use?

A 1 **B** $1\frac{1}{4}$ **C** $1\frac{3}{4}$ **D** 3

Answers and explanations on pages 112–114

Mini Test 21: Fractions and Percentages

Page 24

1 C **2** B **3** C **4** B **5** D **6** A **7** 34% **8** A **9** 18
10 A **11** D **12** 27 **13** D **14** C **15** D **16** A

1 [Write both fractions with a common denominator (15).]

$2\frac{1}{5} = 2\frac{3}{15}$

$2\frac{1}{3} = 2\frac{5}{15}$

Now the number halfway between $2\frac{3}{15}$ and $2\frac{5}{15}$ is $2\frac{4}{15}$.

So the number halfway between $2\frac{1}{5}$ and $2\frac{1}{3}$ is $2\frac{4}{15}$.

2 $\frac{2}{5}$ are jellies and $\frac{1}{4}$ are mints.

Fraction of jellies and mints $= \frac{2}{5} + \frac{1}{4}$

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

$= \frac{13}{20}$

Remainder $= 1 - \frac{13}{20}$

$= \frac{7}{20}$

The fraction of the sweets that are butterscotch is $\frac{7}{20}$.

3 $\frac{1}{4}$ of the pets are cats.

Number of cats $= 240 \div 4$

$= 60$

Number of dogs $= 240 - 60$

$= 180$

Number of Labradors $= 30\%$ of 180

$= \frac{3}{10}$ of 180

$= 54$

4 Each set of fractions has denominators 3, 4, 5, 6 and 10.

The common denominator is 60.

$\frac{2}{3} = \frac{40}{60}$

$\frac{3}{4} = \frac{45}{60}$

$\frac{4}{5} = \frac{48}{60}$

$\frac{5}{6} = \frac{50}{60}$

$\frac{7}{10} = \frac{42}{60}$

So, in order, from lowest to highest, the fractions are $\frac{40}{60}, \frac{42}{60}, \frac{45}{60}, \frac{48}{60}, \frac{50}{60}$.

The set of fractions that is in order is $\frac{2}{3}, \frac{7}{10}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$.

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

$= \frac{4}{3}$ $\left[\frac{\cancel{5}^{1}}{3} \times \frac{4}{\cancel{5}_{1}}\right]$

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

6 Consider each option:

$\frac{4}{25}$ cannot be simplified.

$\frac{12}{30} = \frac{2}{5}$ (after dividing both numerator and denominator by 6)

$\frac{16}{40} = \frac{2}{5}$ (after dividing both numerator and denominator by 8)

$\frac{28}{70} = \frac{2}{5}$ (after dividing both numerator and denominator by 14)

The fraction that is not equal to $\frac{2}{5}$ is $\frac{4}{25}$.

7 Total people = 200

Sport	Cricket	Swimming	Netball	Football
Number	39	51	42	

Number in table $= 39 + 51 + 42$

$= 132$

Number who preferred football $= 200 - 132$

$= 68$

Fraction who preferred football $= \frac{68}{200}$

$= \frac{34}{100}$

So 34% of the people preferred to watch football.

8 $\frac{13}{4} = 3\frac{1}{4}$

[4 divides into 13 three times with remainder one.]

9 Number who received top marks is 15% of 180.

Now 10% of 180 = 18

So 5% of 180 = 9

and 15% of 180 = 18 + 9

$= 27$

Number of girls $= \frac{2}{3}$ of 27

$= 18$

[Or $\frac{2}{3}$ of 15% are girls who received top marks.

Now $\frac{2}{3}$ of 15 is 10, so the number of girls who received top marks is 10% of 180 or 18.]

10 Increase $= 25500 - 25000$

$= 500$

% increase $= \frac{500}{25000} \times 100\%$

$= \frac{5}{250} \times 100\%$

$= \frac{1}{50} \times 100\%$

$= 2\%$

11 Fraction $= \frac{50}{320}$

$= \frac{5}{32}$

Now $\frac{1}{3}$ is $\frac{5}{15}$, $\frac{1}{4}$ is $\frac{5}{20}$, $\frac{1}{5}$ is $\frac{5}{25}$ and $\frac{1}{6}$ is $\frac{5}{30}$.

So, of the options, the fraction is closest to $\frac{1}{6}$.

[Or, for each option, find the fraction of 320.

$\frac{1}{3}$ of 320 is more than 100.

$\frac{1}{4}$ of 320 is 80.

$\frac{1}{5}$ of 320 is 64.

$\frac{1}{6}$ of 320 is about 53.]

12 $\frac{2}{3}$ of a number is 24.

$\frac{1}{3}$ of the number is $24 \div 2$ or 12.

The number is 12×3 or 36.

Now $\frac{3}{4}$ of 36 is 27.

So $\frac{3}{4}$ of the number is 27.

13 In 1983, Cameron was 21.

Amy's age in 1983 $= \frac{1}{3}$ of $21 = 7$

Years later $= 2011 - 1983 = 28$

Cameron's age in 2011 $= 21 + 28$

$= 49$

Amy's age in 2011 $= 7 + 28$

$= 35$

Fraction of Cameron's age $= \frac{35}{49}$

$= \frac{5}{7}$

14 [Change each fraction to an equivalent fraction with a common denominator (24).]

$\frac{1}{3} = \frac{8}{24}$

$\frac{3}{8} = \frac{9}{24}$

$\frac{5}{12} = \frac{10}{24}$

$\frac{7}{24}$

The largest fraction is $\frac{10}{24}$ or $\frac{5}{12}$.

15 $15 \div \frac{1}{3} = 15 \times 3$

$= 45$

16 Cups of coconut for 3 dozen $= \frac{3}{4}$

Cups of coconut for 1 dozen $= \frac{3}{4} \div 3$

$= \frac{1}{4}$

Cups of coconut for 4 dozen $= \frac{1}{4} \times 4$

$= 1$

Georgia should use 1 cup of coconut.