∑ DANEMATHICS
FREE CAPS MATHS RESOURCES

GRADE 8 · COMMON FRACTIONS
Equivalent Fractions & Simplifying

MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
33	50 minutes	3

Name: ..... Class: .....

Date: .....

MARK ____ / 33

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 Which one of the following fractions is equivalent to $\frac{2}{7}$? (1)

A) $\frac{2}{21}$ **B)** $\frac{9}{14}$

C) $\frac{4}{9}$ **D)** $\frac{6}{21}$ ✓

Answer: D — Multiply the top and the bottom by the SAME number: $2 \times 3 = 6$ and $7 \times 3 = 21$.

- **A** — multiplied only the denominator
- **B** — added 7 to the top and 7 to the bottom
- **C** — added 2 to both parts instead of multiplying

1.2 $\frac{42}{54}$ written in its simplest form is ... (1)

A) $\frac{7}{9}$ ✓ **B)** $\frac{6}{9}$

C) $\frac{14}{18}$ **D)** $\frac{21}{27}$

Answer: A — The HCF of 42 and 54 is 6, and $42 \div 6 = 7$ while $54 \div 6 = 9$.

- **B** — divided the top by 7 but the bottom by 6 — top and bottom must be divided by the SAME number
- **C** — divided by 3 only
- **D** — divided by 2 only, so it can still be simplified

1.3 Which one of the following is the LARGEST fraction? (1)

A) $\frac{3}{5}$ **B)** $\frac{7}{12}$

C) $\frac{2}{3}$ ✓ **D)** $\frac{5}{8}$

> **Answer: C** — Over a denominator of 120: 72, 70, 80 and 75 — so $\frac{2}{3}$ is the largest.
>
> - **A** — 72 out of 120
> - **B** — 70 out of 120, the smallest
> - **D** — 75 out of 120

1.4 A fraction is in its lowest terms when ... (1)

A) the denominator is a prime number **B) the only common factor of the two parts is 1** ✓

C) the numerator is 1 **D)** the numerator is smaller than the denominator

> **Answer: B** — Nothing except 1 divides into both, so there is nothing left to cancel.
>
> - **A** — $\frac{6}{7}$ is simplest and 7 is prime, but $\frac{4}{9}$ is simplest too and 9 is not
> - **C** — $\frac{1}{2}$ is simplest, but so is $\frac{3}{4}$
> - **D** — $\frac{3}{4}$ and $\frac{6}{8}$ both satisfy that, yet $\frac{6}{8}$ is not in its lowest terms

1.5 $\frac{3}{4}$ of the learners in a class of 32 are present. How many are ABSENT? (1)

A) 12 **B)** 24

C) 4 **D)** 8 ✓

> **Answer: D** — Present $= \frac{3}{4} \times 32 = 24$, so absent $= 32 - 24 = 8$.
>
> - **A** — multiplied the 3 and the 4 of the fraction $(3 \times 4 = 12)$
> - **B** — that is the number PRESENT, not absent
> - **C** — divided 32 by 8

1.6 Which one of the following is NOT equal to $\frac{1}{2}$? (1)

A) $\frac{4}{6}$ ✓ **B)** $\frac{25}{50}$

C) $\frac{7}{14}$ **D)** $\frac{3}{6}$

> **Answer: A** — $\frac{4}{6}$ simplifies to $\frac{2}{3}$, not $\frac{1}{2}$.
>
> - **B** — $25 \div 25 = 1$ and $50 \div 25 = 2$
> - **C** — $7 \div 7 = 1$ and $14 \div 7 = 2$
> - **D** — $3 \div 3 = 1$ and $6 \div 3 = 2$

1.7 $\frac{2}{5}$ written as a percentage is ... (1)

A) 20% **B)** $2{,}5\%$

C) 40% ✓ **D)** 25%

> **Answer: C** — $2 \div 5 = 0{,}4$ and $0{,}4 \times 100 = 40\%$.
>
> - **A** — found one fifth instead of two fifths
> - **B** — divided 5 by 2 and moved the comma the wrong way
> - **D** — wrote the digits 2 and 5 side by side

1.8 Multiplying the numerator and the denominator of a fraction by 3 ... (1)

A) leaves its value unchanged ✓ **B)** makes the fraction one third of its value

C) makes the fraction 3 times as big **D)** makes it a whole number

> **Answer: A** — You have multiplied by $\frac{3}{3}$, which is 1, and multiplying by 1 changes nothing.
>
> - **B** — only multiplying the denominator by 3 would do that
> - **C** — only multiplying the NUMERATOR by 3 would do that
> - **D** — nothing about it forces a whole number

1.9 Which of the following lists is arranged from SMALLEST to largest? (1)

A) $\frac{3}{4}$; $\frac{2}{3}$; $\frac{1}{2}$ **B)** $\frac{1}{2}$; $\frac{3}{4}$; $\frac{2}{3}$

C) $\frac{2}{3}$; $\frac{1}{2}$; $\frac{3}{4}$ **D)** $\frac{1}{2}$; $\frac{2}{3}$; $\frac{3}{4}$ ✓

> **Answer: D** — Over a denominator of 12: 6, 8 and 9.
>
> - **A** — that is largest to smallest
> - **B** — $\frac{3}{4}$ (9 twelfths) is bigger than $\frac{2}{3}$ (8 twelfths), so the last two are out of order
> - **C** — $\frac{2}{3}$ (8 twelfths) is bigger than $\frac{1}{2}$ (6 twelfths), so the first two are out of order

1.10 In a test Sipho scored $\frac{18}{24}$ and Ann scored $\frac{15}{20}$. Which statement is TRUE? (1)

A) Ann did better **B) They scored the same ✓**

C) Sipho did better **D)** It cannot be compared

> **Answer: B** — Both simplify to $\frac{3}{4}$, so the two scores are equal.
>
> - **A** — Ann's denominator is smaller, but that does not make her score lower
> - **C** — 18 is bigger than 15, but the totals differ too
> - **D** — fractions with different denominators can always be compared

ANSWER GRID — MARKING GUIDELINE

1.1	A	B	C	**D**
1.2	**A**	B	C	D
1.3	A	B	**C**	D
1.4	A	**B**	C	D
1.5	A	B	C	**D**
1.6	**A**	B	C	D
1.7	A	B	**C**	D
1.8	**A**	B	C	D
1.9	A	B	C	**D**
1.10	A	**B**	C	D

QUESTION 2 [14 MARKS]

Answer the questions below WITHOUT using a calculator. Leave all answers in their simplest form.

2.1 Fill in the missing number: $\frac{2}{7} = \frac{?}{21}$, and hence write $\frac{2}{7}$ with a denominator of 63. **(3)**

$21 \div 7 = 3$, so the numerator is multiplied by 3 as well *(1)*

$\frac{2}{7} = \frac{\mathbf{6}}{\mathbf{21}}$ *(1)*

$63 \div 7 = 9$, so $\frac{2}{7} = \frac{\mathbf{18}}{\mathbf{63}}$ *(1)*

2.2 Simplify $\frac{84}{126}$ to its lowest terms. **(4)**

Both are even: $\frac{42}{63}$ *(1)*

Both divide by 3: $\frac{14}{21}$ *(1)*

Both divide by 7 *(1)*: $\frac{\mathbf{2}}{\mathbf{3}}$ *(1)*

(Dividing once by the HCF, 42, earns the same marks.)

2.3 Arrange in ASCENDING order: $\frac{2}{3}; \frac{5}{8}; \frac{7}{12}; \frac{3}{4}$ **(4)**

LCD = 24 *(1)*

$\frac{16}{24}; \frac{15}{24}; \frac{14}{24}; \frac{18}{24}$ *(2)*

$\frac{\mathbf{7}}{\mathbf{12}}; \frac{\mathbf{5}}{\mathbf{8}}; \frac{\mathbf{2}}{\mathbf{3}}; \frac{\mathbf{3}}{\mathbf{4}}$ *(1)*

2.4 Is $\frac{7}{9}$ in its lowest terms? Give a reason for your answer, and simplify $\frac{42}{54}$ fully. **(3)**

Yes *(1)*

The only common factor of 7 and 9 is 1 *(1)*

$\frac{42}{54} = \frac{\mathbf{7}}{\mathbf{9}}$, dividing top and bottom by 6 *(1)*

QUESTION 3 [9 MARKS]

Answer the questions below.

3.1 A learner writes $\frac{12}{18} = \frac{6}{9} = \frac{3}{4}$. Identify the step where the learner went wrong and give the correct answer. (3)

> $\frac{6}{9}$ is correct *(1)*
>
> The last step is wrong: 6 and 9 divide by 3, not by 2 *(1)*
>
> $\frac{6}{9} = \frac{\mathbf{2}}{\mathbf{3}}$ *(1)*

3.2 Explain why multiplying the numerator and the denominator by the same number does not change the value of a fraction. (2)

> You are multiplying by $\frac{n}{n}$, which is 1 *(1)*, and multiplying by 1 leaves the value unchanged *(1)*

3.3 Determine which is larger, $\frac{5}{7}$ or $\frac{7}{10}$, and show how you decided. (4)

> LCD $= 70$ *(1)*
>
> $\frac{5}{7} = \frac{50}{70}$ and $\frac{7}{10} = \frac{49}{70}$ *(2)*
>
> $\frac{\mathbf{5}}{\mathbf{7}}$ is larger *(1)*

TOTAL: 33 marks

This question paper consists of 3 questions.

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