Multiplying Fractions - Worksheet

Skill

Group A - Multiplying proper fractions

Work out, simplifying where possible:

1) $\frac{1}{2} \times \frac{1}{3}$ **2)** $\frac{1}{3} \times \frac{1}{4}$ **3)** $\frac{1}{3} \times \frac{2}{5}$

4) $\frac{2}{3} \times \frac{2}{7}$ **5)** $\frac{3}{4} \times \frac{2}{7}$ **6)** $\frac{3}{5} \times \frac{4}{9}$

7) $\frac{3}{4} \times \frac{2}{3}$ **8)** $\frac{5}{7} \times \frac{2}{15}$ **9)** $\frac{4}{7} \times \frac{5}{8}$

10) $\frac{7}{15} \times \frac{3}{14}$ **11)** $\frac{6}{11} \times \frac{5}{12}$ **12)** $\frac{16}{25} \times \frac{5}{24}$

Group B - Multiplying fractions by a whole number

Work out, simplifying where possible:

1) $\frac{1}{2}$ of 38 **2)** $\frac{1}{3}$ of 48 **3)** $\frac{3}{5}$ of 75

4) $\frac{1}{4} \times 24$ **5)** $\frac{3}{7} \times 28$ **6)** $\frac{4}{9} \times 12$

7) $16 \times \frac{3}{8}$ **8)** $12 \times \frac{5}{8}$ **9)** $42 \times \frac{3}{14}$

10) $12 \times \frac{3}{2}$ **11)** $\frac{5}{2} \times 15$ **12)** $36 \times \frac{14}{9}$

Group C - Multiplying mixed numbers

Work out, writing your answers as a mixed number and simplifying where possible:

1) $\frac{1}{2} \times 1\frac{1}{3}$ **2)** $\frac{1}{3} \times 1\frac{1}{4}$ **3)** $\frac{1}{5} \times 1\frac{2}{3}$

4) $2\frac{1}{2} \times \frac{1}{3}$ **5)** $2\frac{1}{4} \times \frac{1}{5}$ **6)** $2\frac{3}{4} \times \frac{2}{3}$

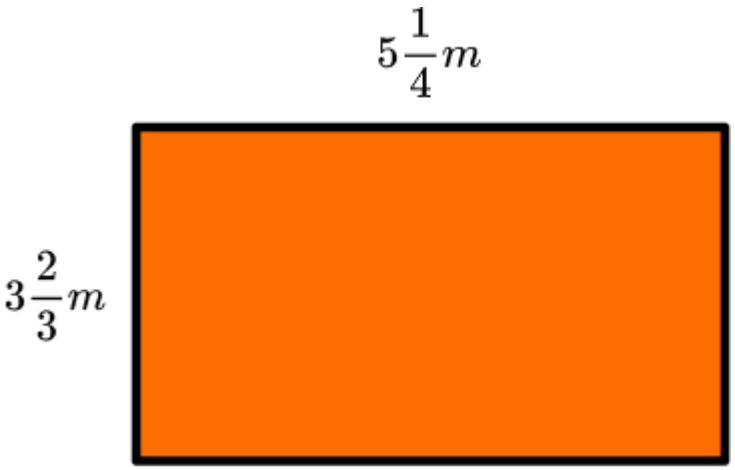
7) $1\frac{1}{2} \times 2\frac{1}{3}$ **8)** $2\frac{1}{2} \times 3\frac{1}{3}$ **9)** $2\frac{2}{3} \times 3\frac{1}{5}$

10) $3\frac{1}{2} \times 3\frac{1}{3}$ **11)** $2\frac{2}{5} \times 5\frac{2}{3}$ **12)** $4\frac{3}{5} \times 4\frac{1}{6}$

Multiplying Fractions - Worksheet

Applied

1) A rectangular garden measures $3\frac{2}{3}m$ by $5\frac{1}{4}m$.



(a) Calculate the area of the garden, in square metres, giving your answer as a mixed number.

(b) Grass seed is £2 per square metre. How much will it cost to buy grass seed for the garden?

2) Julie has 4 cats. Each cat eats $\frac{2}{3}$ of a can of cat food per day.

(a) Calculate the number of tins of cat food Julie will need to buy for one week.

(b) The vet tells Julie that her cats are eating too much and she should reduce the amount of food that each cat eats.

Each cat now eats $\frac{5}{8}$ of a can.

Does this change the amount of tins that Julie will need to buy for one week?

3) The diagram shows a pattern made from identical triangles.

Each triangle has a base of $6\frac{1}{2}\ cm$ and a perpendicular height of $3\frac{1}{5}\ cm$.

(a) The area of a triangle can be found using the formula

$Area = \frac{1}{2} \times base \times perpendicular\ height$

Use this to find the area of one of the triangles in the pattern. Give your answer as a simplified mixed number.

(b) What is the least number of triangles needed to make a whole number total area?

4) **(a)** A formula for converting temperature in °C to °F is

$F = \frac{9}{5}C + 32$

Convert $8\frac{1}{3}$ °C to °F.

(b) The formula for converting temperature in °F to °C is

$C = \frac{5}{9}(F - 32)$

Convert $34\frac{3}{5}$ °F to °C.

Multiplying Fractions - Exam Questions

1) **(a)** Work out $\frac{3}{5} \times \frac{4}{9}$.
Simplify your answer.

..... **(2)**

(b) Work out $2\frac{3}{7} \times 1\frac{3}{4}$.
Simplify your answer.

..... **(3)**

(5 marks)

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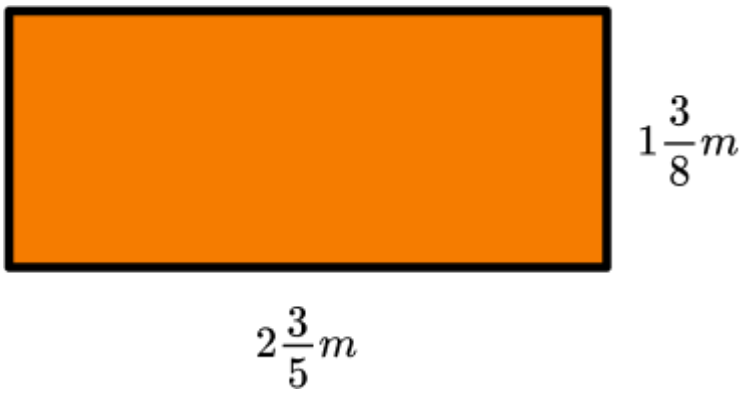
2) Jo has a rectangular chicken pen measuring $1\frac{3}{8}m$ by $2\frac{3}{5}m$.



(a) Find the area of the chicken pen, giving your answer as a mixed number

.....m^2 **(3)**

(b) It is recommended that there should be $\frac{2}{5}m^2$ for every chicken kept in the pen.
Jo has 8 chickens.
Is her chicken pen big enough?

..... **(3)**

(6 marks)

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3) **(a)** Work out $\left(\frac{3}{8}\right)^2$

..... **(2)**

(b) Work out $\left(-\frac{2}{5}\right)^3$

..... **(3)**

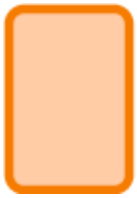
(5 marks)

4) **(a)** Work out $\frac{2}{5} \times \frac{3}{8} \times 1\frac{1}{4}$.

Simplify your answer.

..... **(3)**

(b) Work out the missing number



$$\div \frac{4}{7} = 1\frac{2}{5}$$

..... **(3)**

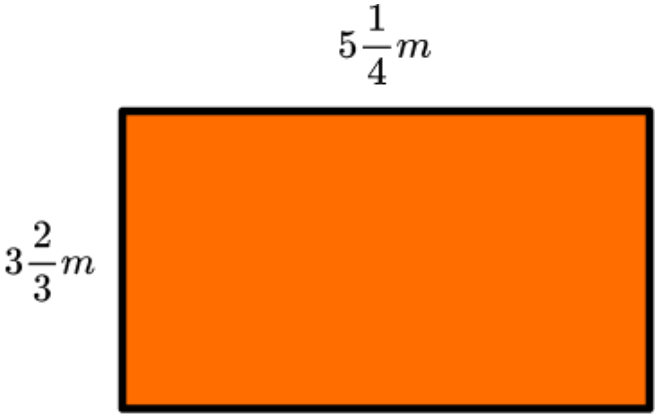
(6 marks)

Multiplying Fractions - Answers

	Question	Answer
	Skill Questions	
Group A	Work out, simplifying where possible: **1)** $\frac{1}{2} \times \frac{1}{3}$ **2)** $\frac{1}{3} \times \frac{1}{4}$ **3)** $\frac{1}{3} \times \frac{2}{5}$ **4)** $\frac{2}{3} \times \frac{2}{7}$ **5)** $\frac{3}{4} \times \frac{2}{7}$ **6)** $\frac{3}{5} \times \frac{4}{9}$ **7)** $\frac{3}{4} \times \frac{2}{3}$ **8)** $\frac{5}{7} \times \frac{2}{15}$ **9)** $\frac{4}{7} \times \frac{5}{8}$ **10)** $\frac{7}{15} \times \frac{3}{14}$ **11)** $\frac{6}{11} \times \frac{5}{12}$ **12)** $\frac{16}{25} \times \frac{5}{24}$	**1)** $\frac{1}{6}$ **2)** $\frac{1}{12}$ **3)** $\frac{2}{15}$ **4)** $\frac{4}{21}$ **5)** $\frac{3}{14}$ **6)** $\frac{4}{15}$ **7)** $\frac{1}{2}$ **8)** $\frac{2}{21}$ **9)** $\frac{5}{14}$ **10)** $\frac{1}{10}$ **11)** $\frac{5}{22}$ **12)** $\frac{2}{15}$
Group B	Work out, simplifying where possible: **1)** $\frac{1}{2}$ of 38 **2)** $\frac{1}{3}$ of 48 **3)** $\frac{3}{5}$ of 75 **4)** $\frac{1}{4} \times 24$ **5)** $\frac{3}{7} \times 28$ **6)** $\frac{4}{9} \times 12$ **7)** $16 \times \frac{3}{8}$ **8)** $12 \times \frac{5}{8}$	**1)** 19 **2)** 16 **3)** 45 **4)** 6 **5)** 12 **6)** $\frac{16}{3}$ **or** $5\frac{1}{3}$ **7)** 6 **8)** $\frac{15}{2}$ **or** $7\frac{1}{2}$

	9) $42 \times \frac{3}{14}$ **10)** $12 \times \frac{3}{2}$ **11)** $\frac{5}{2} \times 15$ **12)** $36 \times \frac{14}{9}$	**9)** 9 **10)** 18 **11)** $\frac{75}{2}$ **or** $37\frac{1}{2}$ **12)** 56
Group C	Work out, writing your answers as a mixed number and simplifying where possible: **1)** $\frac{1}{2} \times 1\frac{1}{3}$ **2)** $\frac{1}{3} \times 1\frac{1}{4}$ **3)** $\frac{1}{5} \times 1\frac{2}{3}$ **4)** $2\frac{1}{2} \times \frac{1}{3}$ **5)** $2\frac{1}{4} \times \frac{1}{5}$ **6)** $2\frac{3}{4} \times \frac{2}{3}$ **7)** $1\frac{1}{2} \times 2\frac{1}{3}$ **8)** $2\frac{1}{2} \times 3\frac{1}{3}$ **9)** $2\frac{2}{3} \times 3\frac{1}{5}$ **10)** $3\frac{1}{2} \times 3\frac{1}{3}$ **11)** $2\frac{2}{5} \times 5\frac{2}{3}$ **12)** $4\frac{3}{5} \times 4\frac{1}{6}$	**1)** $\frac{2}{3}$ **2)** $\frac{5}{12}$ **3)** $\frac{1}{3}$ **4)** $\frac{5}{6}$ **5)** $\frac{9}{20}$ **6)** $1\frac{5}{6}$ **7)** $3\frac{1}{2}$ **8)** $8\frac{1}{3}$ **9)** $8\frac{8}{15}$ **10)** $11\frac{2}{3}$ **11)** $13\frac{3}{5}$ **12)** $19\frac{1}{6}$

Multiplying Fractions - Answers

	Question	Answer
	Applied Questions	
1)	A rectangular garden measures $3\frac{2}{3}m$ by $5\frac{1}{4}m$. 	
	a) Calculate the area of the garden, in square metres, giving your answer as a mixed number.	**a)** $19\frac{1}{4}m^2$
	b) Grass seed is £2 per square metre. How much will it cost to buy grass seed for the garden?	**b)** $£38.50$
2)	Julie has 4 cats. Each cat eats $\frac{2}{3}$ of a can of cat food per day.	
	a) Calculate the number of tins of cat food Julie will need to buy for one week.	**a)** $\frac{2}{3} \times 4 \times 7 = 18\frac{2}{3}$. 19 tins needed
	b) The vet tells Julie that her cats are eating too much and she should reduce the amount of food that each cat eats. Each cat now eats $\frac{5}{8}$ of a can. Does this change the amount of tins that Julie will need to buy for one week?	**b)** $\frac{5}{8} \times 4 \times 7 = 17\frac{1}{2}$. 18 tins needed Number of tins reduced by 1.

3)	The diagram shows a pattern made from identical triangles.  Each triangle has a base of $6\frac{1}{2}\ cm$ and a perpendicular height of $3\frac{1}{5}\ cm$.	
	a) The area of a triangle can be found using the formula $Area = \frac{1}{2} \times base \times perpendicular\ height$ Use this to find the area of one of the triangles in the pattern. Give your answer as a simplified mixed number.	**a)** $\frac{1}{2} \times 6\frac{1}{2} \times 3\frac{1}{5} = 10\frac{2}{5} cm^2$
	b) What is the least number of triangles needed to make a whole number total area?	**b)** 5, giving an area of $52\ cm^2$
4)	**a)** A formula for converting temperature in ℃ to ℉ is $F = \frac{9}{5}C + 32$ Convert $8\frac{1}{3}$℃ to ℉.	**a)** 47 ℉
	b) The formula for converting temperature in ℉ to ℃ is $C = \frac{5}{9}(F - 32)$ Convert $34\frac{3}{5}$℉ to ℃.	**b)** $1\frac{4}{9}$℃

Multiplying Fractions - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Work out $\frac{3}{5} \times \frac{4}{9}$. Simplify your answer.	(a) $\frac{12}{45}$ seen **(1)** Final answer of $\frac{4}{15}$ **(1)**	**(2)**
(b)	Work out $2\frac{3}{7} \times 1\frac{3}{4}$. Simplify your answer.	(b) One of the fractions changed to improper, eg $\frac{17}{7}$ or $\frac{7}{4}$ **(1)** A correct unsimplified answer eg $\frac{119}{28}$ **(1)** Answer of $\frac{17}{4}$ or $4\frac{1}{4}$ **(1)**	**(3)**
2)	Jo has a rectangular chicken pen measuring $1\frac{3}{8}m$ by $2\frac{3}{5}m$.  $1\frac{3}{8}m$ $2\frac{3}{5}m$		
(a)	Find the area of the chicken pen, giving your answer as a mixed number	(a) One of the fractions changed to improper, eg $\frac{11}{8}$ or $\frac{13}{5}$ **(1)** A correct improper answer $\frac{143}{40}$ **(1)** Answer of $3\frac{23}{40}$ **(1)**	**(3)**
(b)	It is recommended that there should be $\frac{2}{5}m^2$ for every chicken kept in the pen. Jo has 8 chickens. Is her chicken pen big enough?	(b) Attempt to calculate $\frac{2}{5} \times 8$ **(1)** Process to compare $\frac{16}{5}$ with $\frac{143}{40}$, for example writing $\frac{16}{5}$ as $\frac{128}{40}$ **(1)** Statement of "Yes" **(1)**	**(3)**
3) (a)	Work out $\left(\frac{3}{8}\right)^2$	(a) Correct numerator or denominator **(1)** Both correct $\frac{9}{64}$ **(1)**	**(2)**

(b)	Work out $\left(-\frac{2}{5}\right)^3$	**(b)** Correct numerator or denominator **(1)** Both correct $\frac{8}{125}$ **(1)** Negative sign ,$-\frac{8}{125}$ **(1)**	**(3)**
4) (a)	Work out $\frac{2}{5} \times \frac{3}{8} \times 1\frac{1}{4}$. Simplify your answer.	**(a)** Converts $1\frac{1}{4}$ to $\frac{5}{4}$ **(1)** Correct unsimplified answer of $\frac{30}{160}$ **(1)** Correct answer of $\frac{3}{16}$ **(1)**	**(3)**
(b)	Work out the missing number $\square \div \frac{4}{7} = 1\frac{2}{5}$	**(b)** Sight of $1\frac{2}{5} \times \frac{4}{7}$ **(1)** Converts $1\frac{2}{5}$ to $\frac{7}{5}$ **(1)** Correct answer of $\frac{4}{5}$ **(1)**	**(3)**