Simplifying Fractions

Write $\frac{12}{24}$ in simplest form.



Ellie

$$\frac{12}{24} = \frac{\cancel{12}}{\cancel{24}} = \frac{1}{4}$$

a) Show that Ellie's method did not work for this question.

b) Find a fraction for which Ellie's method does give the correct answer.

c) Ellie says: My method works for $\frac{49}{98}$

Is she correct?

Simplifying Fractions

a. $\frac{26}{64}$ b. $\frac{26}{65}$ c. $\frac{39}{195}$ d. $\frac{19}{95}$

e. $\frac{13}{325}$ f. $\frac{39}{325}$ g. $\frac{39}{192}$ h. $\frac{79}{395}$

i. $\frac{39}{975}$ j. $\frac{154}{252}$ k. $\frac{154}{253}$ l. $\frac{154}{352}$

Sort the fractions into groups

Ellie's method does not work				

Ellie's method partially works				

Ellie's method fully works				

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Sort the fractions into groups

Ellie's method does not work				
a	f	g	j	

Ellie's method partially works				
c	h	i	l	

Ellie's method fully works				
b	d	e	k	

Double Angle Formula

Find the exact value of $\cos 2\theta$, given that $\cos\theta = \frac{3}{5}$.



Ramona

$$\cos 2\theta = 2 \times \frac{3}{5} = \frac{6}{5}$$

a) Show, by finding the correct answer, that Ramona's method did not work for this question.

b) Explain how Ramona should have known her answer couldn't be correct.

c) For what value of $\cos\theta$ would Ramona's method have worked?

Rounding

Round 12.5761 to 1 decimal place.



$12.5761 \rightarrow 12.576 \rightarrow 12.58 \rightarrow 12.6$

a) Is Sal's answer correct? Explain your answer.

b) Find a number for which Sal's method would give the wrong answer.

c) Describe with an inequality all the values of x that would round to 12.6 to 1 decimal place where Sal's method would give the wrong answer.

Second Derivative

Find an expression for $\frac{d^2y}{dx^2}$, given that $y = e^{-x^2}$.



Oona

$$\frac{dy}{dx} = -2xe^{-x^2}$$

$$\text{so } \frac{d^2y}{dx^2} = \left(-2xe^{-x^2}\right)^2 = 4x^2e^{-2x^2}$$

a) Show, by finding the correct answer, that Oona's method did not work for this question.

b) By letting $u = \frac{dy}{dx}$, solve a differential equation to find all functions y for which Oona's method would give the correct answer.