

1. Complete the doubling and halving method

$$24 = 1 \times 24$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

$$24 = 2 \times \dots$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

$$24 = 4 \times \dots$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

$$24 = 8 \times \dots$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

~~$$24 = 16 \times 1.5$$~~

1.5 is not an integer so 16 is not a factor of 24

2. (a) Complete the doubling and halving method.

$$22 = 1 \times 22$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

$$22 = 2 \times \dots$$

$$\times 2 \downarrow \quad \downarrow \div 2$$

~~$$22 = 4 \times \dots$$~~

(b) Write down **two** factor pairs of 22 \times

..... \times

(c) Explain why 4 is not a factor of 22

.....

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3. Complete these doubling and halving methods.

$$\begin{aligned} \text{(a)} \quad & 36 = 1 \times 36 \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 36 = 2 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 36 = 4 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & \text{---} 36 = 8 \times \text{---} \dots \end{aligned}$$

(b) Explain why 8 is not a factor of 36

.....

$$\begin{aligned} \text{(c)} \quad & 40 = 1 \times 40 \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 2 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 4 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 8 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & \text{---} 40 = 16 \times \text{---} \end{aligned}$$

(d) Explain why 16 is not a factor of 40

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(b) Explain why 8 is not a factor of 36

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$$\begin{aligned} \text{(c)} \quad & 40 = 1 \times 40 \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 2 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 4 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & 40 = 8 \times \dots \\ & \times 2 \downarrow \quad \downarrow \div 2 \\ & \text{---} 40 = 16 \times \text{---} \end{aligned}$$

(d) Explain why 16 is not a factor of 40

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