



Cumulative Fractions - set samples - paper 1

1. A charity runs several fundraising campaigns. Each campaign raises a certain amount in its first week. In each subsequent week, the total raised increases by a fraction of the previous week's total: one half in week 2, one third in week 3, one quarter in week 4, and one fifth in week 5.

(a) A campaign grew by \$90 during week 5. What was its total at end of week 1?

ans _____

(b) A campaign is \$360 at end of week 1. How much has its total increased from the end of week 1 to the end of week 5?

ans _____

(c) A campaign raises \$180 in total by end of week 5. How much was raised in week 4?

ans _____

2. Judy manages several savings accounts. Each account receives a deposit in the first month. In each following month, the balance grows by a decreasing fraction of the balance at the end of the previous month: one third in month 2, one quarter in month 3, and one fifth in month 4.

(a) A savings balance is \$420 at end of month 1. What is its balance at end of month 3?

ans _____

(b) A savings balance is \$180 at end of month 1. How much does it grow during month 2?

ans _____

(c) If Judy starts with \$480 and another saver starts with \$630, what is the difference in their balances at end of month 4?

ans _____

3. A charity runs several fundraising campaigns. Each campaign raises a certain amount in its first week. In each subsequent week, the total raised increases by a fraction of the previous week's total: one half in week 2, one third in week 3, one quarter in week 4, and one fifth in week 5.

(a) A campaign grew by \$200 during week 4. What was its total at end of week 1?

ans _____

(b) A campaign is \$240 at end of week 1. How much has its total increased from the end of week 1 to the end of week 5?

ans _____

(c) One campaign starts with \$80 in week 1 and a second with \$100. Following the same pattern, what is the difference in their totals at end of week 5?

ans _____



Cumulative Fractions - set samples - Answers

1. (a) Growth during week 5 = $(1/5) \times$ value at end of week 4
Value at end of week 4 = $5/2 \times$ total at end of week 1
So growth during week 5 = $(1/5) \times 5/2 \times$ total at end of week 1
So growth during week 5 = $1/2 \times$ total at end of week 1
 $90 = 1/2 \times$ total at end of week 1
Total at end of week 1 = $90 \times 2 = \$180$
Answer: \$180

(b) Using telescopic pattern
 $360 \times 3/2 \times 4/3 \times 5/4 \times 6/5 = 360 \times 3$
Total at end of week 5: $360 \times 3 = \$1080$
Total growth = $1080 - 360 = \$720$
Answer: \$720

(c) Total at end of week 5 = $3 \times$ total at end of week 1
Total at end of week 1 = $180 / 3 = \$60$
Using telescopic pattern
 $60 \times 3/2 \times 4/3 = 60 \times 2$
Total at end of week 3: $60 \times 2 = \$120$
Raised in week 4 = $(1/4) \times \$120 = \30
Answer: \$30

2. (a) Using telescopic pattern
 $420 \times 4/3 \times 5/4 = 420 \times 5/3$
Total at end of month 3: $420 \times 5/3 = \$700$
Answer: \$700
- (b) Total at end of month 1: \$180
Growth during month 2: $180 \times 1/3 = \$60$
Answer: \$60
- (c) Balance 1 at month 4: $480 \times 2 = \$960$
Balance 2 at month 4: $630 \times 2 = \$1260$
Difference = $1260 - 960 = \$300$
Answer: \$300

3. (a) Growth during week 4 = $(1/4) \times$ value at end of week 3
Value at end of week 3 = $2 \times$ total at end of week 1
So growth during week 4 = $(1/4) \times 2 \times$ total at end of week 1
So growth during week 4 = $1/2 \times$ total at end of week 1
 $200 = 1/2 \times$ total at end of week 1
Total at end of week 1 = $200 \times 2 = \$400$
Answer: \$400

(b) Using telescopic pattern
 $240 \times 3/2 \times 4/3 \times 5/4 \times 6/5 = 240 \times 3$
Total at end of week 5: $240 \times 3 = \$720$
Total growth = $720 - 240 = \$480$
Answer: \$480

(c) Total 1: $80 \times 3 = \$240$
Total 2: $100 \times 3 = \$300$
Difference = $300 - 240 = \$60$
Answer: \$60