Arithmetic and Algebra

Question 1:

Kwame and Ama are siblings who attend the same school in Accra. Kwame is in grade nine, and Ama is in grade seven. One day, they decided to save some money from their daily allowance. Kwame saved 3 cedis every day while Ama saved 2 cedis every day.

a. If Kwame and Ama saved money for 15 days, how much money did each of them save individually?

b. Together, how much money did Kwame and Ama save in total after 15 days?

c. Kwame decided to save half of his money in a bank that gives 5% interest per month. How much interest will Kwame earn in one month from the amount he saved in the bank?

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Question 2:

Akosua, Yaw, and Kofi participated in a charity run to raise money for their school library. Akosua ran twice the distance Yaw ran, and Yaw ran 3 kilometers more than Kofi. If the total distance all three students ran was 27 kilometers:

a. Let the distance Kofi ran be xx kilometers. Write an expression for the distance Yaw ran and the distance Akosua ran in terms of xx.

b. Form an equation to represent the total distance they ran and solve for xx.

c. Calculate the exact distance each student ran.

Set 2: Geometry and Measurement

Question 1:

Esi and Kojo are friends who live in Kumasi. They decided to measure the length of their rectangular school playground. Esi measured the length of the playground to be 60 meters and the width to be 40 meters.

a. Calculate the perimeter of the playground.

b. Calculate the area of the playground.

c. If the school wants to build a fence around the playground and the cost of fencing is 15 cedis per meter, how much will it cost to fence the entire playground?

Question 2:

Adjoa and Kweku are building a rectangular garden in their backyard. The garden's length is twice its width. They have a total of 54 meters of fencing material to enclose the garden.

a. Let the width of the garden be *w*w meters. Write an expression for the length of the garden in terms of *w*w.

b. Write an equation for the perimeter of the garden and solve for *w*w.

c. Calculate the length and the width of the garden.

d. Determine the area of the garden.

Solutions to the questions above

Set 1: Arithmetic and Algebra

Question 1:

a. If Kwame saved 3 cedis every day for 15 days, the amount Kwame saved is:
Kwame’s Savings=3×15=45 cedisKwame’s Savings=3×15=45 cedis

If Ama saved 2 cedis every day for 15 days, the amount Ama saved is:
Ama’s Savings=2×15=30 cedisAma’s Savings=2×15=30 cedis

b. Together, the total amount saved by Kwame and Ama is:
Total Savings=45 cedis+30 cedis=75 cedisTotal Savings=45 cedis+30 cedis=75 cedis

c. Kwame decided to save half of his money in a bank, which is:
Amount saved in the bank=452=22.5 cedisAmount saved in the bank=245=22.5 cedis

The interest earned in one month at 5% is:
Interest=22.5×0.05=1.125 cedisInterest=22.5×0.05=1.125 cedis

Question 2:

a. Let the distance Kofi ran be xx kilometers. Then:

- The distance Yaw ran is x+3x+3 kilometers.
- The distance Akosua ran is 2(x+3)2(x+3) kilometers.

b. The total distance all three students ran is: x+(x+3)+2(x+3)=27x+(x+3)+2(x+3)=27

Simplify and solve for xx: x+x+3+2x+6=27x+x+3+2x+6=27 4x+9=274x+9=27 4x=27−94x=27−9 4x=184x=18 x=4.5x=4.5

c. Therefore, the distances each student ran are:

- Kofi: x=4.5x=4.5 kilometers
- Yaw: x+3=4.5+3=7.5x+3=4.5+3=7.5 kilometers
- Akosua: 2(x+3)=2×7.5=152(x+3)=2×7.5=15 kilometers
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Set 2: Geometry and Measurement

Question 1:

a. The perimeter of the rectangular playground is: Perimeter=2×(Length+Width)=2×(60+40)=2×100=200 metersPerimeter=2×(Length+Width)=2×(60+40)=2×100=200 meters

b. The area of the playground is: Area=Length×Width=60×40=2400 square metersArea=Length×Width=60×40=2400 square meters

c. The cost to fence the entire playground is: Cost=200×15=3000 cedisCost=200×15=3000 cedis

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Question 2:

a. Let the width of the garden be ww meters. Then the length is: Length=2wLength=2w

b. The perimeter of the garden is: 2(Length+Width)=542(Length+Width)=54 2(2*w*+*w*)=542(2w+w)=54 2×3*w*=542×3w=54 6*w*=546w=54 *w*=9w=9

c. Therefore, the dimensions of the garden are:

- Width: *w*=9w=9 meters
- Length: 2*w*=2×9=182w=2×9=18 meters

d. The area of the garden is:
Area=Length×Width=18×9=162 square metersArea=Length×Width=18×9=162 square meters