**Year 12 General Mathematics - Superannuation**

**7F Question 11 – calculations**

*Luke returns to Australia from the USA at age 23. He wins a contract to play basketball in the NBL for $96,000 per year. He chooses to have his 9.5% employer superannuation contribution put in a superannuation fund that returns an average of 8.2% p.a. compounded monthly.*

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| **Question Section** | **Formula and calculations** | **Answer** |
| 1. Show that the monthly amount invested by Luke is $760 | $96,000 x .095 / 12 months | **$760 per month** |
| 1. Luke adds $140 per month to his superannuation fund himself, so the total going into his fund if $900 per month. Calculate the amount Luke will have after a 15 year career in the NBL. State the assumptions you have made. | N =15 x 12 = 180  I = 8.2  PV = 0  PMT = -900  **FV = 0**  P/Y = 12  C/Y = 12 | **FV = $317,012.52**  Provided the salary remains the same and the fund interest amount remains the same. |
| 1. Calculate the interest earned by the superannuation fund during this time. | $900 x 180 (payments) = $162,000  $317,012.52 - $162,000 | The amount of interest earned= **$155,012.52** |
| 1. Luke finds that his actual superannuation fund balance after 15 years is $350,000. Explain why he may have more than the exported balance calculated in **b**. | * Luke’s salary may have increased * The fund may have performed better. | |
| 1. At age 38, Luke gets a job as a coach. His aim is to end up with $4 million in his superannuation fund at age 60. Assuming that his fund balance is currently $350,000 and will still return 8.2% p.a. compounded monthly, what monthly contribution is needed to achieve his goal? | N =22 x 12 = 264  I = 8.2  PV = -$350,000  **PMT = 0**  FV = $4,000,000  P/Y = 12  C/Y = 12 | Monthly contribution need to be **$2560.28** |
| 1. Luke’s salary as a coach is $180,000 per year: 2. How much superannuation will his employer contribute each month? 3. How much extra will Luke need to contribute to achieve his goal? | $180,000 x .095/12 = $1425  $2560 - $1425 = $1135.28 | Luke will need to contribute **$1,135.28** |
| 1. Luke retires at age 60 years, and invests $4 million into an allocated pension generating 6.5% p.a. interest paid annually. If he wants his money to last 25 years, how much will he be able to withdraw yearly as a pension? | N =25  I = 6.5  PV = -$4,000,000  **PMT = 0**  FV = 0  P/Y = 1  C/Y = 1 | Luke will be able to withdraw yearly as a pension **$327,925.92** |
| 1. If Luke dies unexpectedly 10 years after retiring, calculate the amount left in his superannuation fund at this time. | N =10  I = 6.5  PV = $4,000,000  PMT = -$327,925.92  **FV = 0**  P/Y = 1  C/Y = 1 | After 10 years there will be **$3,083,478.88** |