**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 = 180I = 8.2PV = 0PMT = -900**FV = 0**P/Y = 12C/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 = 264I = 8.2PV = -$350,000**PMT = 0**FV = $4,000,000P/Y = 12C/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 =25I = 6.5PV = -$4,000,000**PMT = 0**FV = 0P/Y = 1C/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 =10I = 6.5PV = $4,000,000PMT = -$327,925.92**FV = 0**P/Y = 1C/Y = 1 | After 10 years there will be **$3,083,478.88** |