

Active to Retirement Calculation

[Your Name]

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Field	Value
Scheme	[Scheme Name]
Version	1.0
Author	[Your Name]
Date	[Date]

1 1. Purpose

This document specifies how to calculate an active member's pension at retirement (retiring directly from active service).

2 2. Member Data

Enter the member's details below. **Change these values** to test different scenarios.

```
# Member details - EDIT THESE VALUES
final_pensionable_salary = 45000.00
years_of_service = 25
years_service_pre_1997 = 10      # Service before 6 April 1997 (GMP accruing)
years_service_post_1997 = 15     # Service after 5 April 1997 (no GMP)
years_early = 0                  # Years before Normal Retirement Age
gender = "M"                    # M or F
date_of_birth = "1960-05-15"     # For reference only
```

3 3. Scheme Parameters

These are the scheme rules. Only change if the scheme rules are different.

```
# Scheme parameters - usually don't change these
accrual_rate = 1/60              # e.g., 1/60th, 1/80th
gmp_accrual_rate = 1/80          # Typical GMP accrual rate

# Early retirement factors (years early: factor)
erf_male = {0: 1.000, 1: 0.940, 2: 0.882, 3: 0.826, 4: 0.772, 5: 0.720}
erf_female = {0: 1.000, 1: 0.945, 2: 0.891, 3: 0.839, 4: 0.789, 5: 0.741}

# Late retirement factors (years late: factor)
lrf = {0: 1.000, 1: 1.060, 2: 1.124, 3: 1.191, 4: 1.262, 5: 1.338}

# Commutation factor (optional tax-free cash)
commutation_factor = 12         # £12 of cash for each £1 of pension given up
```

4 4. Calculation

4.1 Step 1: Calculate Total Pension at Normal Retirement Age

Formula: Pension = Final Salary × Accrual Rate × Years of Service

```
pension_at_nra = final_pensionable_salary * accrual_rate * years_of_service

print(f"Final pensionable salary: £{final_pensionable_salary:,.2f}")
print(f"Accrual rate:           {accrual_rate:.4f} (1/{int(1/accrual_rate)}))")
print(f"Years of service:       {years_of_service}")
print(f"")
print(f"Pension at NRA:        £{pension_at_nra:,.2f}")

Final pensionable salary: £45,000.00
Accrual rate:           0.0167 (1/60)
Years of service:       25

Pension at NRA:        £18,750.00
```

4.2 Step 2: Calculate GMP (Pre-1997 Service)

GMP is calculated on pre-6 April 1997 service only.

```
# GMP is typically calculated differently - this is a simplified estimate
gmp_at_retirement = final_pensionable_salary * gmp_accrual_rate * years_service_pre_1997
```

```
# Excess pension is the total minus GMP
excess_at_nra = pension_at_nra - gmp_at_retirement

print(f"Pre-1997 service:           {years_service_pre_1997} years")
print(f"GMP accrual rate:          {gmp_accrual_rate:.4f} (1/{int(1/gmp_accrual_rate)}))")
print(f"")
print(f"GMP at retirement:         £{gmp_at_retirement:,.2f}")
print(f"Excess at retirement:       £{excess_at_nra:,.2f}")

Pre-1997 service:           10 years
GMP accrual rate:          0.0125 (1/80)

GMP at retirement:         £5,625.00
Excess at retirement:       £13,125.00
```

4.3 Step 3: Apply Early/Late Retirement Factor

If retiring early, pension is reduced. If retiring late, pension may be increased.

```
# Determine retirement factor
if years_early > 0:
    # Early retirement - apply reduction
    if gender == "M":
        retirement_factor = erf_male.get(years_early, 0.720)
    else:
        retirement_factor = erf_female.get(years_early, 0.741)
    factor_type = "Early retirement factor"
elif years_early < 0:
    # Late retirement - apply increase
    years_late = abs(years_early)
    retirement_factor = lrf.get(years_late, 1.338)
    factor_type = "Late retirement factor"
else:
    retirement_factor = 1.000
    factor_type = "At NRA (no adjustment)"

# GMP is not reduced for early retirement (simplification - check scheme rules)
gmp_final = gmp_at_retirement
excess_final = excess_at_nra * retirement_factor

print(f"Years early/late:           {years_early}")
print(f"{factor_type}: {retirement_factor:.4f}")
print(f"")
print(f"GMP (final):              £{gmp_final:,.2f}")
print(f"Excess (adjusted):         £{excess_final:,.2f}")

Years early/late:           0
At NRA (no adjustment): 1.0000

GMP (final):              £5,625.00
Excess (adjusted):         £13,125.00
```

4.4 Step 4: Total Pension at Retirement

```
total_pension = gmp_final + excess_final

print("=*40)
print(f"TOTAL PENSION: £{total_pension:.2f} per year")
print("=*40)

=====
TOTAL PENSION: £18,750.00 per year
=====
```

4.5 Step 5: Optional Tax-Free Cash (Commutation)

Member can give up part of their pension for a tax-free lump sum.

```
# Maximum tax-free cash is typically 25% of total value
# Simplified calculation - actual rules are more complex
max_commutation_pension = total_pension * 0.25 # Give up 25% of pension
max_lump_sum = max_commutation_pension * commutation_factor
residual_pension = total_pension - max_commutation_pension

print(f"COMMUTATION OPTION (if taking maximum lump sum):")
print(f"")
print(f"Pension given up:      £{max_commutation_pension:.2f}")
print(f"Commutation factor:    {commutation_factor}")
print(f"Tax-free lump sum:     £{max_lump_sum:.2f}")
print(f"Residual pension:      £{residual_pension:.2f} per year")
```

COMMUTATION OPTION (if taking maximum lump sum):

Pension given up:	£4,687.50
Commutation factor:	12
Tax-free lump sum:	£56,250.00
Residual pension:	£14,062.50 per year

5 5. Summary

Run this cell to see the full calculation summary.

```
print("CALCULATION SUMMARY")
print("=*50)
print(f(""))
print(f"INPUTS:")
print(f"  Final pensionable salary: £{final_pensionable_salary:>12,.2f}")
print(f"  Total years of service:   {years_of_service:>12}")
print(f"  Pre-1997 service:        {years_service_pre_1997:>12}")
print(f"  Post-1997 service:       {years_service_post_1997:>12}")
print(f"  Years early:            {years_early:>12}")
print(f"  Gender:                 {gender:>12}")
print(f="")
print(f"CALCULATION:")
print(f"  Accrual rate:           {accrual_rate:>12.4f}")
print(f"  Pension at NRA:         £{pension_at_nra:>12,.2f}")
print(f"  GMP portion:            £{gmp_at_retirement:>12,.2f}")
```

```

print(f" Excess portion:           £{excess_at_nra:>12,.2f}")
print(f" Retirement factor:        £{retirement_factor:>12.4f}")
print(f(""))
print(f"RESULT:")
print(f" GMP at retirement:       £{gmp_final:>12,.2f}")
print(f" Excess at retirement:     £{excess_final:>12,.2f}")
print(f" " + "-"*36)
print(f" TOTAL PENSION:            £{total_pension:>12,.2f} p.a.")
print(f(""))
print(f"OPTIONAL COMMUTATION:")
print(f" Max lump sum:            £{max_lump_sum:>12,.2f}")
print(f" Residual pension:         £{residual_pension:>12,.2f} p.a.")
print(f(""))
print("=".*50)

```

CALCULATION SUMMARY

INPUTS:

Final pensionable salary:	£ 45,000.00
Total years of service:	25
Pre-1997 service:	10
Post-1997 service:	15
Years early:	0
Gender:	M

CALCULATION:

Accrual rate:	0.0167
Pension at NRA:	£ 18,750.00
GMP portion:	£ 5,625.00
Excess portion:	£ 13,125.00
Retirement factor:	1.0000

RESULT:

GMP at retirement:	£ 5,625.00
Excess at retirement:	£ 13,125.00
<hr/>	
TOTAL PENSION:	£ 18,750.00 p.a.

OPTIONAL COMMUTATION:

Max lump sum:	£ 56,250.00
Residual pension:	£ 14,062.50 p.a.

6 6. Early Retirement Factor Table

Years Early	Male	Female
0	1.000	1.000
1	0.940	0.945
2	0.882	0.891
3	0.826	0.839

Years Early	Male	Female
4	0.772	0.789
5	0.720	0.741

7 7. Late Retirement Factor Table

Years Late	Factor
0	1.000
1	1.060
2	1.124
3	1.191
4	1.262
5	1.338

8 8. Edge Cases

Scenario	How to Handle
No GMP (joined after 1997)	Set <code>years_service_pre_1997 = 0</code>
Normal retirement	Set <code>years_early = 0</code>
Late retirement	Set <code>years_early</code> to negative number (e.g., -2 for 2 years late)
Part-time service	Adjust <code>years_of_service</code> to FTE equivalent
No commutation	Ignore commutation section

9 9. Sign-Off

Role	Name	Date
Author		
Reviewer		
Approver		