

Review dividing and multiplying by 2^m using bit shifting (Lesson02)

Examples:

Divide 4050 by $8 = 2^3$
(discard the fractional part)

```
mov.w #4050, R12  
rra.w R12  
rra.w R12  
rra.w R12
```

$4050/8 = 506.25$
R12 contains 506

Divide -4000 by $8 = 2^3$
(discard the fractional part)

```
mov.w #-4000, R12  
rra.w R12  
rra.w R12  
rra.w R12
```

$-4000/8 = -500$
R12 contains -500

Multiply -4000 by $4 = 2^2$

```
mov.w #-4000, R12
```

```
rla.w R12  
rla.w R12
```

$-4000 \times 4 = -1600$
R12 contains -1600

Program: BitShiftingArith

;4000/8 = 500

```
mov.w #4000, R12
; divide by 8 = 2^3
rra.w R12
rra.w R12
rra.w R12
```

;R12 contains 500

;4050/8 = 506.25

```
mov.w #4050, R12
; divide by 8 = 2^3
rra.w R12
rra.w R12
rra.w R12
```

;R12 contains 506

;-4000/8 = -500.0

```
mov.w #-4000, R12
; divide by 8 = 2^3
rra.w R12
rra.w R12
rra.w R12
```

;R12 contains -500

; 4000*8 = 32000

```
mov.w #4000, R12
; multiply by 8 = 2^3
rla.w R12
rla.w R12
rla.w R12
```

; R12 contains 32000

```
mov.w #4000, R12
```

; multiply by 16 = 2^4

;4000*16 = 64000 -> overflow

```
rla.w R12
rla.w R12
rla.w R12
```

rla.w R12 ;R12 contains -1536 (overflow)