Type conversion

- Java is a strongly typed language : each data value is associated with a particular type.
- When converting a type to another, the following are considered :
  - Magnitude.
  - Precision.
- Widening versus narrowing conversion.
- In Java, conversions can occur in three ways :
  - Assignment conversion.
  - Arithmetic promotion.
  - Casting.

Widening conversion

- Conversion from one data type to another type that uses an equal of greater amount of space to store the value.
- Precision can be lost when converting from an `int` or `long` to a `float` for example.

From	To
byte	short, int, long, float or double
short	int, long, float or double
char	int, long, float or double
int	long, float or double
long	float or double
float	double

Narrowing conversion

- Conversion from one data type to another type that uses less space to store the value and therefore some of the information may be compromised.
- Narrowing conversion can lose both numeric magnitude and precision.

From	To
byte	char
short	byte or char
char	byte or short
int	byte, short or char
long	byte, short, char or int
float	byte, short, char, int or long
double	byte, short, char, int, long or float

Arithmetic Promotion

- Occurs automatically when certain arithmetic operators need to modify their operands in order to perform the operation.
- Rules for unary operators :
  1. If the operand is of type byte or short, then it is converted to int.
  2. Otherwise, the operand remains the same type.
- Rules for binary operators :
  1. If either operand is of type double, then the other operand is converted to float.
  2. Otherwise, if either operand is of type float, then the other operand is converted to float.
  3. Otherwise, if either operand is of type long, then the other operand is converted to long.
  4. Otherwise, both operands are converted to int.

Assignment conversion

- Occurs when a value of one type is assigned to a variable of another type, during which the value is converted to the new type.
- Only widening conversions can be accomplished through assignment.

Casting

- A cast is Java operator that is specified by the name in parentheses. It is placed in front of the value to be converted.
- Example : `dollars = (int) money;`
- The cast operator has a higher precedence than the arithmetic operators.