Jacob
Riedel

Comp Arch HW3

1) $91_{10} + C6_{16}$

0101101l + 11000110

```
  11111
  01011011
+ 11000110
----------
 100100001
```

226 + 32 + 1

$\boxed{289_{10}}$

Floating
Unsigned

2) $11_8 - 11_{10}$

001001 - 001011

001001 + (-001011)

001001 + 110101

```
  001001
  110101
--------
  111110
```

$\boxed{-2_{10}}$

Floating
signed

3) $12.3125_{10} + 0110.1_{2Q2}$

1100 0101 + 0001.1000

01100 0101₁₅Q₄

0000 1000₂.₄Q₄

0 ... 1 01

$\boxed{13.8125_{10}}$

Fixed
Unsigned

4) $5.75_{10} - 7.125_{10}$

0101.110 - 0111.001

0101.110 + 1000.111

```
 0101.110
 1000.111
---------
 1110.101
```

2.625

$\boxed{-1.375_{10}}$

Fixed
Signed

5) $9_{10} \cdot 3_{10}$

0100 · 0011

```
    0100
  × 0011
  ------
  001001
 010010
 ------
 011011
```

6+16+2+1

$\boxed{27_{10}}$

Floating
Unsigned

6) $5_{10} \cdot -6_{16}$

1011   1010

```
       1011
     ×1010
  111
 00000000
 1110110 X
 00000 XX
 110 1.1 XXX
 101 1 XXXX
 0110 XXXX
 000 1 11 10
```

$\boxed{30_{10}}$

Floating
Signed

7) $9.5_{10} \cdot 2.625_{10}$

$$1001.1 \quad I_4 Q_1$$
$$\times 10.101 \quad I_2 Q_3$$
$$110011$$
$$00000$$
$$10011$$
$$00000$$
$$10011$$
$$\overline{011000.1111} \quad I_6 Q_4$$

$16+8 \qquad +.9375$

Fixed
Unsigned

$$\boxed{24.9375_{10}}$$

8) $-1.25_{10} \cdot 3.5_{10}$

$$1110.11 \quad I_4 Q_2 \qquad 0011.1 \quad I_4 Q_1$$
$$1110.11$$
$$0011.1$$
$$\overline{111011}$$
$$111011 \, x$$
$$111011 \, xx$$
$$\overline{11011.101} \quad I_4 Q_3$$

Fixed
Signed

$$\boxed{-4.375_{10}}$$