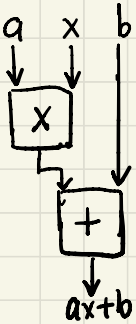
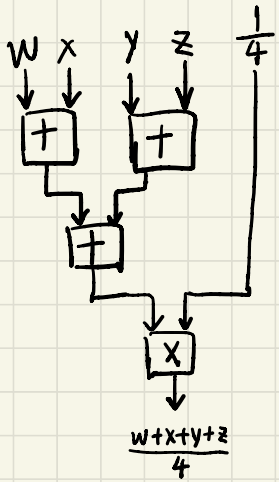
1.

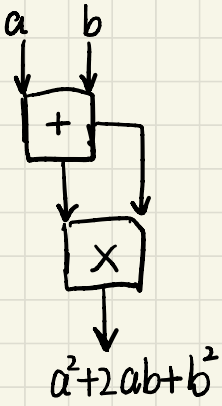
a.



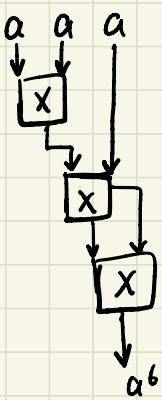
b.



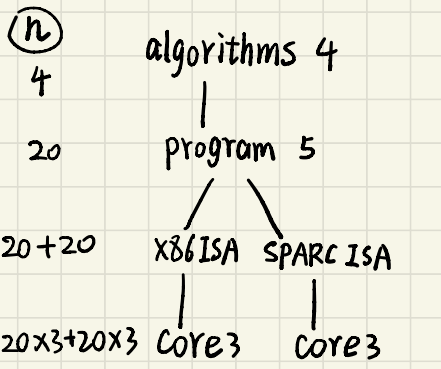
c.



d.



2. a.



共有120种不同的可能

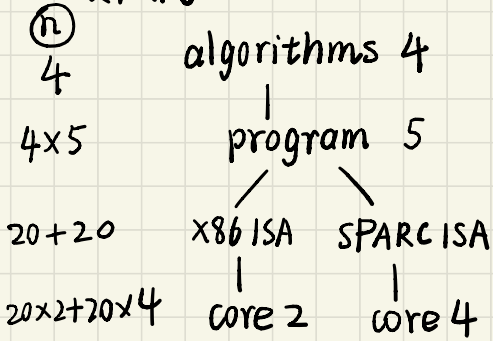
b.

① algorithm 1 – C program – X86 ISA – Core 1 (X86)

② algorithm 2 – Pascal program – X86 ISA – Core 2 (X86)

③ algorithm 3 – Fortran program – SPARC ISA – Core 1 (SPARC)

c. 类似的：



共有120种可能的过程

3. a.

$2^n \geq 400$，$n \geq 8.6$

n至少为9

b.

addition $= 2^9 - 400 = 112$

4.

a. $\frac{010}{2}\ \frac{110}{6}$ (8)

b $\frac{1}{1}\ \frac{101}{5}$ (8)

c. $\frac{1}{1}\ \frac{111}{7}\ \frac{111}{7}\ \frac{000}{0}$ (8)

d. $\frac{01}{1}$ (8)

5.

a.
$$\begin{array}{r} 01 \\ 1011 \\ \hline 1100 \end{array}$$

b.
$$\begin{array}{r} 11111111 \\ 01010101 \\ \hline 01010100 \end{array}$$

c.
$$\begin{array}{r} 0101 \\ 1110 \\ \hline 0011 \end{array}$$

d.
$$\begin{array}{r} 01 \\ 10 \\ \hline 11 \end{array}$$

6.

a. $2^0+2^2+2^4+2^6=85$

b. $2^0+2^2+2^3+2^7=141$

c. $2^7=128$

d. $2^8-1=255$

7. $0.3=2^{-2}+2^{-5}+2^{-6}+2^{-9}+2^{-10}\cdots$

$\therefore e-127=-2,\ e=01111101_{(2)}$

$0.3=1.00110011_{(2)}\times 2^{-2}$

故

$0.3=0\ \underline{01111101}\ \underline{00110011}$

8.

1	10000010	10100100110000000000
负	130 (3)	$1.10100100111\times 2^3=8+4+1+2^{-2}+2^{-5}+2^{-6}$
		$=13.296875$

$\therefore$ value $=-13.296875_{(10)}$

9. xABCD = 1010 1011 1100 1101

x9876 = 1001 1000 0111 0110

OR 1011 1011 1111 1111 = xBBFF

x1234 XOR x1234 = 0 = x0000

xBEEF = 1011 1110 1110 1111

NOT = 0100 0001 0001 0000

xFEED = 1111 1110 1110 1101

AND = 0100 0000 0000 0000 = x4000

10.

10. (2.54)

Fill in the truth table for the equations given. The first line is done as an example.

Q1 = NOT (NOT(X) OR (X AND Y AND Z))

Q2 = NOT ((Y OR Z) AND (X AND Y AND Z))

X	Y	Z	Q_1	Q_2
0	0	0	0	1
0	0	1	0	1
0	1	0	0	1
0	1	1	0	1
1	0	0	1	1
1	0	1	1	1
1	1	0	1	1
1	1	1	0	0