32032 Feedback Quiz, 2022/23, Week 03: Linear codes

Open books. 10–15 minutes. Not for credit. To be marked in class.

Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣

Given that

$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = ☐$.

- $d(C) = ☐$.

Tick true statements:

- ○ C is a trivial code
- ○ C is a repetition code
- ○ C is a zero sum code
- ○ C is a perfect code
- ○ C is an MDS code

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣
Given that
$$C = \{\, 0000, 0112, 0221, 2011, 1022, 2120, 1210, \underline{x}, \underline{y} \,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{}$ and $\boxed{}$.

- $w(C) = \boxed{}$.

- $d(C) = \boxed{}$.

Tick true statements:

- ◯ C is a trivial code
- ◯ C is a repetition code
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Given that
$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{2}$-dimensional vector space over the field $\mathbb{F}_{\boxed{3}}$.

- A generator matrix of C has $\boxed{2}$ rows and $\boxed{4}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{1101}$ and $\boxed{2202}$.

- $w(C) = \boxed{3}$.

- $d(C) = \boxed{3}$.

Tick true statements:

○ C is a trivial code

○ C is a repetition code

○ C is a zero sum code

● C is a perfect code

● C is an MDS code

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Given that

$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{}$ and $\boxed{}$.

- $w(C) = \boxed{}$.

- $d(C) = \boxed{}$.

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Given that
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is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

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Given that

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is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

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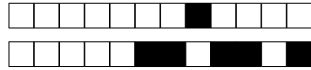

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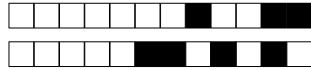

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Given that
$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y}\,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = $ ☐ .

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Tick true statements:

○ C is a trivial code
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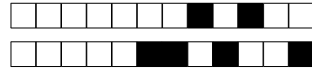

Question 1 ♣

Given that

$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y}\,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = ☐$.

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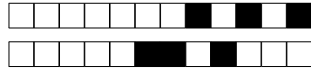$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y} \,\}$$
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- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = \square$.

- $d(C) = \square$.

Tick true statements:

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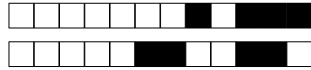

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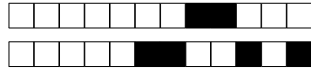

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- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = \square$.

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Tick true statements:

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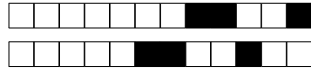$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$
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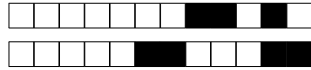

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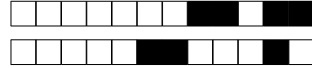

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○ C is a repetition code

○ C is a zero sum code

○ C is a perfect code

○ C is an MDS code

32032 Feedback Quiz, 2022/23, Week 03: Linear codes

Open books. 10–15 minutes. Not for credit. To be marked in class.

Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
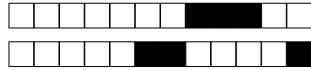

Question 1 ♣

Given that

$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{}$ and $\boxed{}$.

- $w(C) = \boxed{}$.

- $d(C) = \boxed{}$.

Tick true statements:

○ C is a trivial code

○ C is a repetition code

○ C is a zero sum code

○ C is a perfect code

○ C is an MDS code

32032 Feedback Quiz, 2022/23, Week 03: Linear codes

Open books. 10–15 minutes. Not for credit. To be marked in class.

Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣

Given that

$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = \square$.

- $d(C) = \square$.

Tick true statements:

○ C is a trivial code

○ C is a repetition code

○ C is a zero sum code

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○ C is an MDS code

32032 Feedback Quiz, 2022/23, Week 03: Linear codes
Open books. 10–15 minutes. Not for credit. To be marked in class.

Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣
Given that
$$C = \{\,0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y}\,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\,☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = ☐$.

- $d(C) = ☐$.

Tick true statements:

○ C is a trivial code

○ C is a repetition code

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○ C is an MDS code

32032 Feedback Quiz, 2022/23, Week 03: Linear codes

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
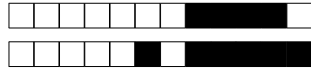

Question 1 ♣

Given that

$$C = \{\, 0000, 0112, 0221, 2011, 1022, 2120, 1210, \underline{x}, \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = ☐$.

- $d(C) = ☐$.

Tick true statements:

- ◯ C is a trivial code
- ◯ C is a repetition code
- ◯ C is a zero sum code
- ◯ C is a perfect code
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32032 Feedback Quiz, 2022/23, Week 03: Linear codes
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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
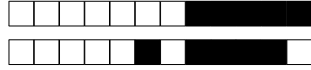

Question 1 ♣
Given that
$$C = \{\, 0000, 0112, 0221, 2011, 1022, 2120, 1210, \underline{x}, \underline{y} \,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{}$ and $\boxed{}$.

- $w(C) = \boxed{}$.

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Tick true statements:

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
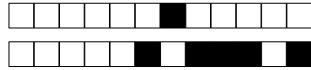

Question 1 ♣
Given that
$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y}\,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐ -dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = $ ☐ .

- $d(C) = $ ☐ .

Tick true statements:

- ◯ C is a trivial code
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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣
Given that

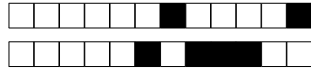$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

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Tick true statements:

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
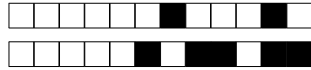

Question 1 ♣

Given that

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is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

- The codevectors $\underline{x}, \underline{y}$ are (write in either order) $\boxed{}$ and $\boxed{}$.

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
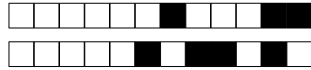

Question 1 ♣
Given that
$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y}\,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a ☐ -dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = \square$.

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Tick true statements:

○ C is a trivial code

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
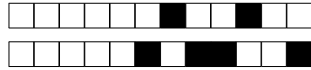

Question 1 ♣
Given that
$$C = \{\,0000,\,0112,\,0221,\,2011,\,1022,\,2120,\,1210,\,\underline{x},\,\underline{y}\,\}$$
is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) =$ ☐ .

- $d(C) =$ ☐ .

Tick true statements:

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
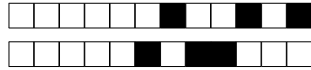

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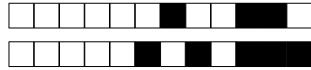

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Given that

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
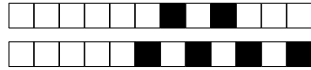

Question 1 ♣
Given that
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Question 1 ♣

Given that

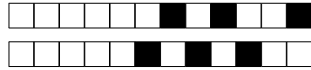$$C = \{\, 0000,\ 0112,\ 0221,\ 2011,\ 1022,\ 2120,\ 1210,\ \underline{x},\ \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐.

- $w(C) = ☐$.

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Tick true statements:

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.
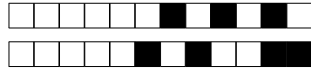

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Given that

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is a ternary linear code, fill in the correct responses below.

- C is a ☐ -dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = $ ☐ .

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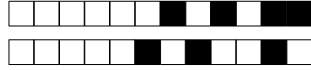

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Given that
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- C is a ☐-dimensional vector space over the field $\mathbb{F}_{☐}$.

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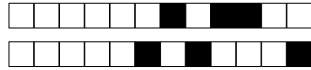

Question 1 ♣

Given that

$$C = \{\, 0000, 0112, 0221, 2011, 1022, 2120, 1210, \underline{x}, \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

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Tick true statements:

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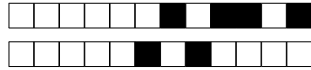

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Given that

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Tick true statements:

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Tick true statements:

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- ◯ C is a perfect code
- ◯ C is an MDS code

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Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣
Given that
$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$
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- A generator matrix of C has ▢ rows and ▢ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ▢ and ▢.

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- C is a ☐ -dimensional vector space over the field $\mathbb{F}_{☐}$.

- A generator matrix of C has ☐ rows and ☐ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ☐ and ☐ .

- $w(C) = ☐$.

- $d(C) = ☐$.

Tick true statements:

○ C is a trivial code

○ C is a repetition code

○ C is a zero sum code

○ C is a perfect code

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32032 Feedback Quiz, 2022/23, Week 03: Linear codes
Open books. 10–15 minutes. Not for credit. To be marked in class.

Recall that a **linear code** is a subspace of the vector space $\mathbb{F}_q^n$.

Question 1 ♣

Given that

$$C = \{\, 0000,\, 0112,\, 0221,\, 2011,\, 1022,\, 2120,\, 1210,\, \underline{x},\, \underline{y} \,\}$$

is a ternary linear code, fill in the correct responses below.

- C is a $\boxed{}$-dimensional vector space over the field $\mathbb{F}_{\boxed{}}$.

- A generator matrix of C has $\boxed{}$ rows and $\boxed{}$ columns.

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is a ternary linear code, fill in the correct responses below.

- C is a ⬚-dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ⬚ rows and ⬚ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) ⬚ and ⬚ .

- $w(C) = \square$.

- $d(C) = \square$.

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- C is a ☐-dimensional vector space over the field $\mathbb{F}_{\square}$.

- A generator matrix of C has ☐ rows and ☐ columns.

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- C is a $\boxed{2}$-dimensional vector space over the field $\mathbb{F}_{\boxed{3}}$.

- A generator matrix of C has $\boxed{2}$ rows and $\boxed{4}$ columns.

- The codevectors $\underline{x}$, $\underline{y}$ are (write in either order) $\boxed{1101}$ and $\boxed{2202}$.

- $w(C) = \boxed{3}$.

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