IP addresses: 1

Practice 1

Select the **two** statements about IP addresses which are correct.

- [ ] IP addresses are assigned to a device by the manufacturer and can't easily be changed
- [ ] Every device connected to the internet has an IP address
- [ ] Mobile phones do not have IP addresses
- [ ] An example of an IP address is `192.168.4.23`

IP addresses: 2

Practice 1

IP addresses are used to identify devices connected to the internet.

IPv4 is the original addressing scheme; each IPv4 address is 32 bits. A newer addressing scheme, IPv6, uses 128-bit addresses.

Which of the following addresses is a valid IPv4 address?

- 255.254.253.252
- 256.1.100.020
- 192.12.1.258
- 172.16.257.100

Quiz:
STEM SMART Computer Science Week 35

IP addresses: 3

Practice 1

IP addresses are used to identify devices connected to the internet.

Under which circumstances is it possible for a device on a local area network to have the same IP address as a device on a different local area network?

- When the two devices are protected by a firewall.
- When the two devices are each given a non-routable address.
- When the two devices will never communicate with each other.
- When the two devices use different network protocols.

Quiz:
STEM SMART Computer Science Week 35

IP addresses: 4

Practice 2

An IP address is split into two parts. The first part is the network ID and the second part is the host ID.

If the length of the network ID is 24 bits, how many hosts can there be on the network?

Quiz:
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IP addresses: 5

Challenge 1

C C

An internet host has the IP address `192.168.100.4/17` — the address is written in CIDR form.

Three facts in the list below can be determined by the specified address. Select the three that are correct.

- [ ] The host has a non-routable IP address
- [ ] The subnet mask could be expressed as `255.255.128.0`
- [ ] The broadcast address is `192.168.255.255`
- [ ] The network (subnet) can support 32,768 hosts
- [ ] The network (subnet) address is `192.168.100.0`
- [ ] Host `192.168.120.4` is on the same network (subnet)

Quiz:
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IP addresses: 6

Challenge 1

C C

In a wide area network, devices are configured as follows:

Computer A

IP address: `192.16.200.123`
Subnet mask: `255.255.0.0`
Default gateway: `192.16.128.254`

Computer B

IP address: `192.12.0.15`
Subnet mask: `255.255.0.0`
Default gateway: `192.12.0.1`

Computer C

IP address: `192.16.200.12`
Subnet mask: `255.255.0.0`
Default gateway: `192.16.128.254`

Computer A wants to send a packet to `192.12.0.15` — where will it be sent to in the first instance?

Answer with the IP address in dotted decimal form

Quiz:
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Subnet masking: 1

Practice 2

A small network with a single subnet has been configured with a subnet mask of `255.255.255.0 (or /24)`

Which of the following pairs of hosts would be on the same network?

- `192.168.1.263` and `192.168.1.136`
- `192.168.12.120` and `192.168.120.12`
- `192.168.1.12` and `192.168.1.120`

Quiz:
STEM SMART Computer Science Week 35

Subnet masking: 2

Challenge 1

C C

A network (subnet) has been configured with a subnet mask of `255.255.192.0 (or /18)`

Which of the following pairs of hosts would be on the same network (subnet)?

- `192.168.12.120` and `192.128.12.120`
- `192.168.200.13` and `192.168.120.136`
- `192.168.200.12` and `192.168.220.12`
- `192.128.226.12` and `192.128.128.12`

Quiz:
STEM SMART Computer Science Week 35

DHCP: 1

Practice 2

Most networks today make use of Dynamic Host Configuration Protocol (DHCP). The procedure has four stages.

For each stage definition in the table below, drag the correct label to match the stage.

Stage	Label
When a device (e.g. computer, phone, or tablet) is started up, it broadcasts out a message for a DHCP server.	
When a DHCP server receives a request, it reserves an IP address for the client and sends an offer message to the client.	
In response to the DHCP offer, the client broadcasts a request message with the details of the server from which it has accepted the offer.	
A packet is sent to the client that includes any other configuration information that the client requested.	

Items:

Acknowledgement Request Discovery Offer

Quiz:
STEM SMART Computer Science Week 35

Network Address Translation

Practice 1

What is the primary role of NAT (Network Address Translation) when a private network connects to the internet?

- To assign a static IP address to each device on the private network.
- To allocate a unique domain name for each device on the private network.
- To convert private IP addresses to public IP addresses for routing over the internet.