



Printed in

## Upgrading and Servicing Guide







## Removing and Replacing the Front Panel



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# Removing and Replacing the Front Panel



10–20 minutes

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## Before You Begin

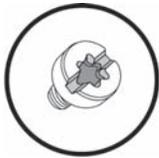
Observe the following requirements before removing and replacing the front panel.



### Tools Needed

- Flathead screwdriver

You can use a flathead screwdriver with the following screw (Torque screw).



**CAUTION:** Static electricity can damage the electronic components inside the computer. Discharge static electricity by touching the metal cage of the computer before touching any internal parts or electronic components.

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### WARNING:

- **Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.**
  - **Avoid touching sharp edges inside the computer.**
- 

**NOTE:** Computer features may vary by model.

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## Removing the Front Panel

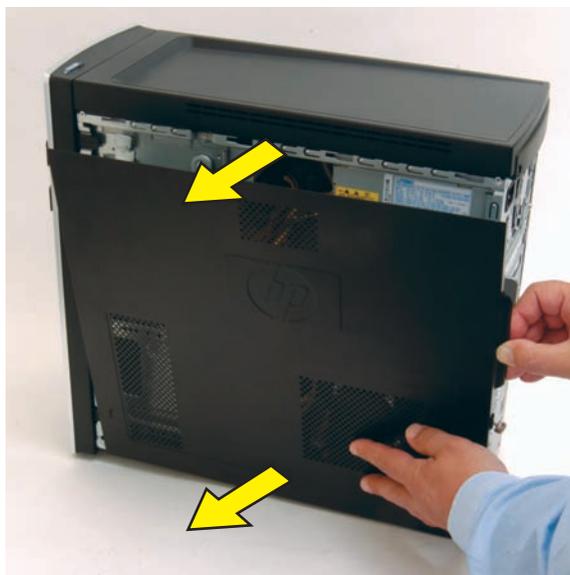
- 1 Remove the Pocket Media Drive, if it is present. Remove the Personal Media Drive, if it is present.
- 2 Turn off the computer.
- 3 Disconnect all peripherals and cables from the front and the back of the computer. Disconnect the power cord last.



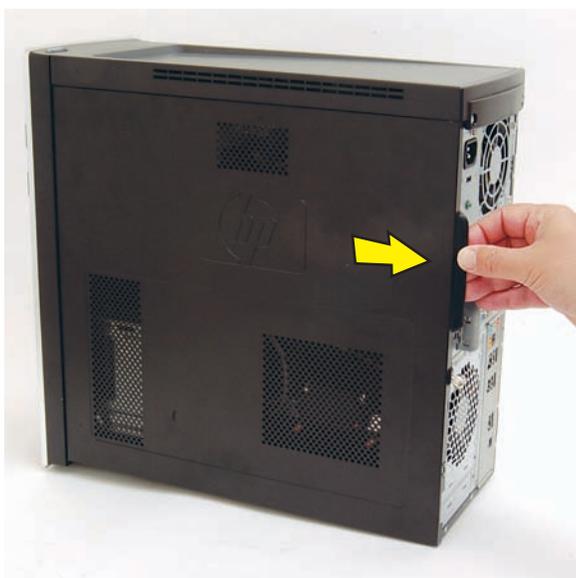
- 4 Loosen the side panel thumbscrew on the back of the computer.



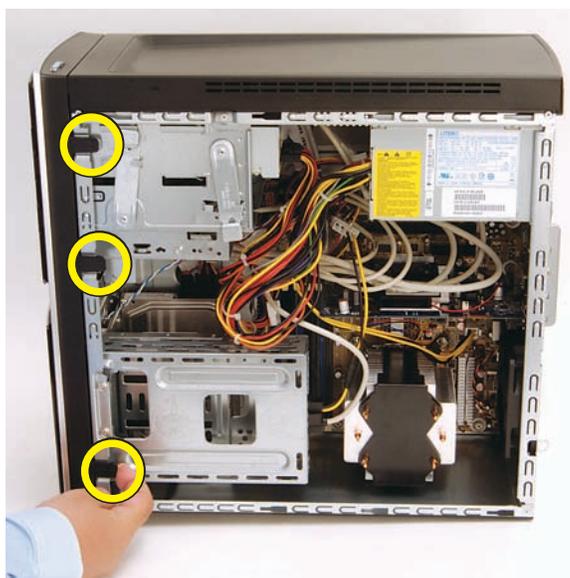
- 6 Tilt out the top of the side panel, and then lift the panel from the computer.



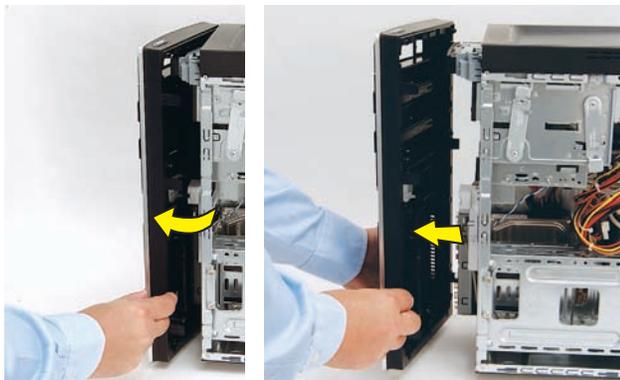
- 5 Grasp the handle, and pull the side panel about 2.5 cm (1 inch) toward the back of the computer to release it.



- 7 Locate the three tabs that secure the front panel to the computer. Pull each of the tabs out slightly, away from the computer, to release the panel.



- 8 Swing the front panel open toward the left, and then lift it off the computer.

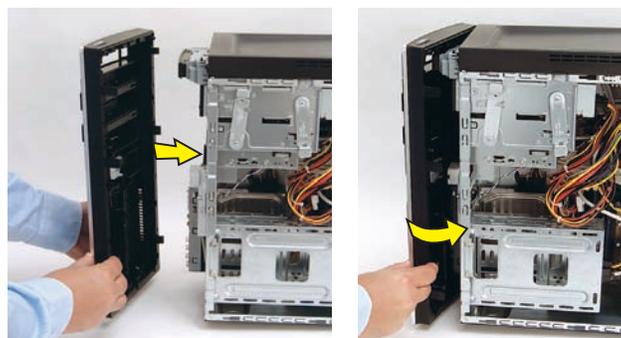


**REMOVAL COMPLETED**

## Replacing the Front Panel

**IMPORTANT:** The new (replacement) part may not look the same as the original part, due to different manufacturers or models. Hewlett-Packard always provides quality parts that meet or exceed your original computer specifications.

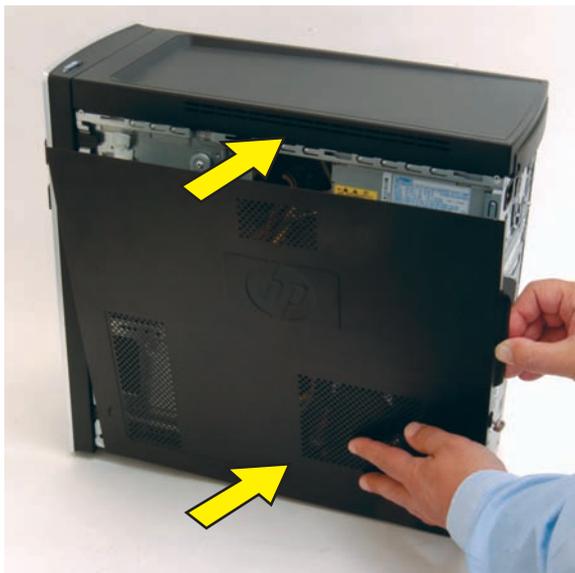
- 1 Hold the front panel over the computer, and then press the left side of the panel, inserting the tabs into the computer. Swing the right side of the panel toward the computer, and then press it into the computer.



- 2 Hold the side panel over the side of the computer with the front edge of the panel about 2.5 cm (1 inch) from the front of the computer.



- 3** Place the bottom of the panel on the computer, inserting the tabs on the inside of the panel into the rail slots on the computer. Swing the top of the panel toward the computer, inserting the top tabs into the rail slots.



- 4** Slide the side panel toward the front of the computer into place.



- 5** Tighten the side panel thumbscrew on the back of the computer.



- 6** Reconnect all peripherals and cables, and then turn on the computer.



**REPLACEMENT COMPLETED**





## Removing and Replacing an Optical Disc Drive



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# Removing and Replacing an Optical Disc Drive



15–25 minutes

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## Before You Begin

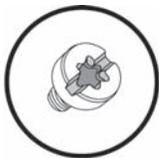
Observe the following requirements before removing and replacing the optical disc drive.



### Tools Needed

- Flathead screwdriver

You can use a flathead screwdriver with the following screw (Torque screw).



**CAUTION:** Static electricity can damage the electronic components inside the computer. Discharge static electricity by touching the metal cage of the computer before touching any internal parts or electronic components.

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### WARNING:

- **Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.**
  - **Avoid touching sharp edges inside the computer.**
- 

**NOTE:** Computer features may vary by model.

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## Removing an Optical Disc Drive

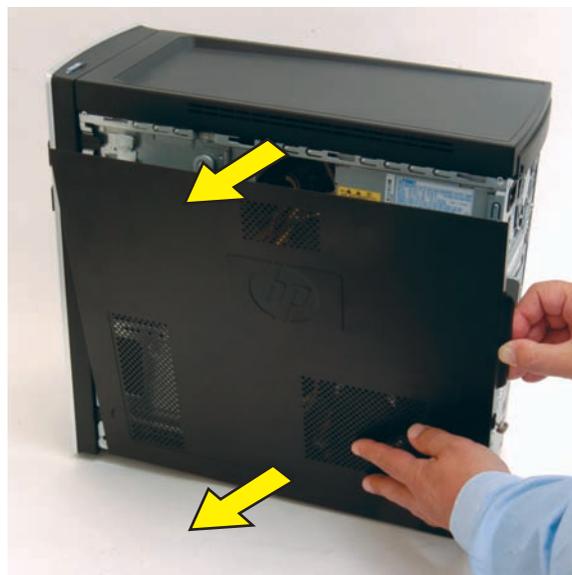
- 1 Before you begin servicing the computer, press the Eject button, and remove any CD or DVD from the optical disc drive tray.
- 2 Remove the Pocket Media Drive, if it is present. Remove the Personal Media Drive, if it is present.
- 3 Turn off the computer.
- 4 Disconnect all peripherals and cables from the front and the back of the computer. Disconnect the power cord last.



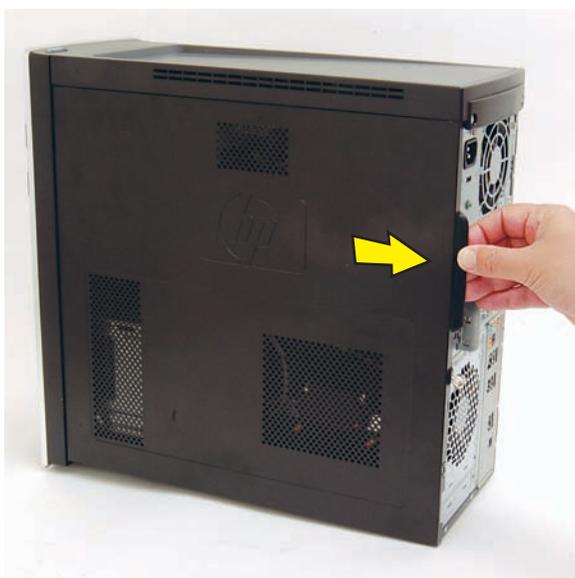
- 5 Loosen the side panel thumbscrew on the back of the computer.



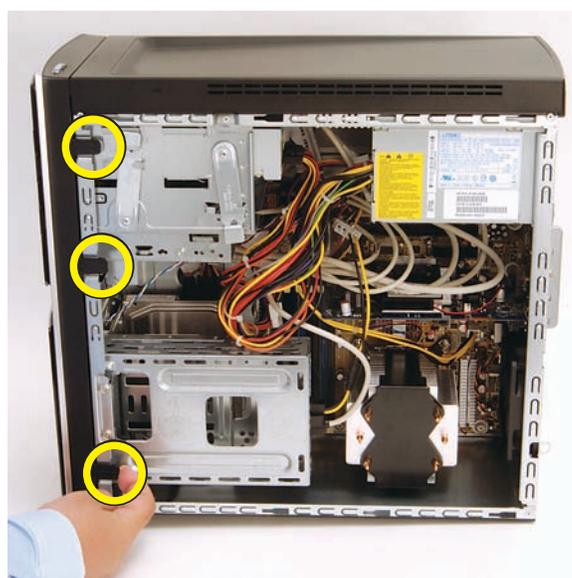
- 7 Tilt out the top of the side panel, and then lift the panel from the computer.



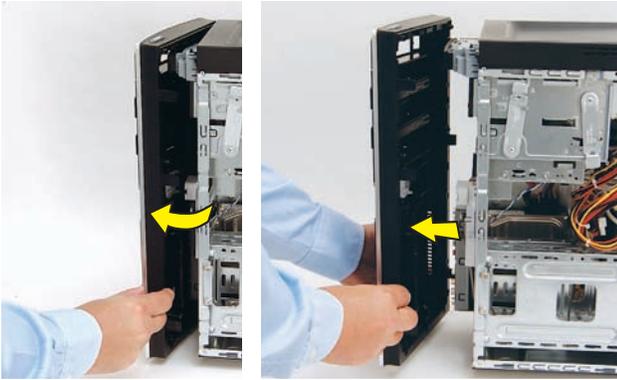
- 6 Grasp the handle, and pull the side panel about 2.5 cm (1 inch) toward the back of the computer to release it.



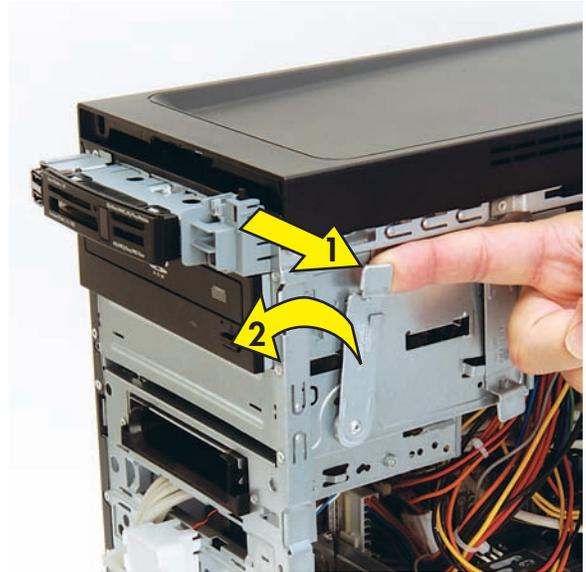
- 8 Locate the three tabs that secure the front panel to the computer. Pull each of the tabs out slightly, away from the computer, to release the panel.



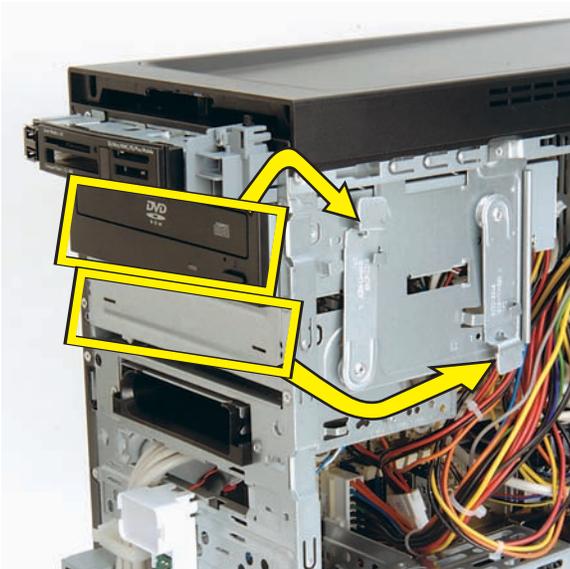
**9** Swing the front panel open toward the left, and then lift it off the computer.



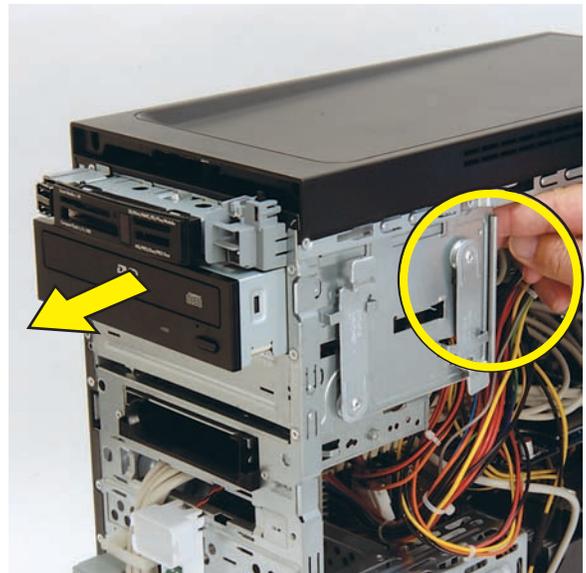
**11** Pull out the optical drive latch (1), and then swing it to the left until it is in the center position (2).



**10** Locate the optical disc drive you want to replace (and also the drive latch for it).



**12** Push the drive partway out through the front of the computer.

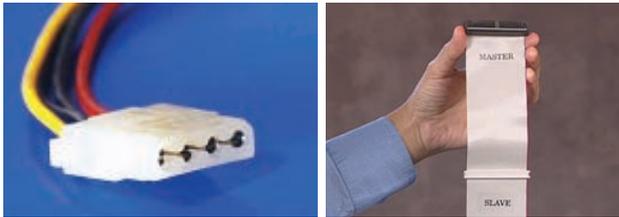


**13** Disconnect the cables from the drive:

The plugs on the cables are keyed and can be inserted only when aligned properly with the connector on the drive.

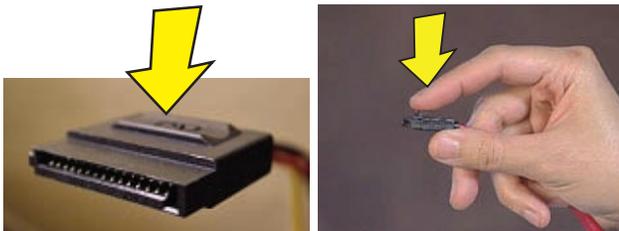
In addition, some plugs have a latch that must be pressed or squeezed to release the plug while pulling it from the connector.

- Plugs without a latch:

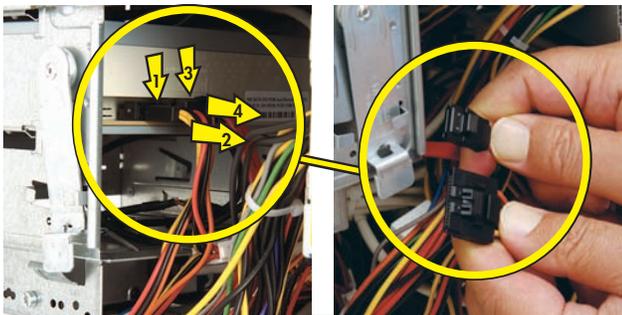


For plugs without a latch, pull the plug straight out from the connector.

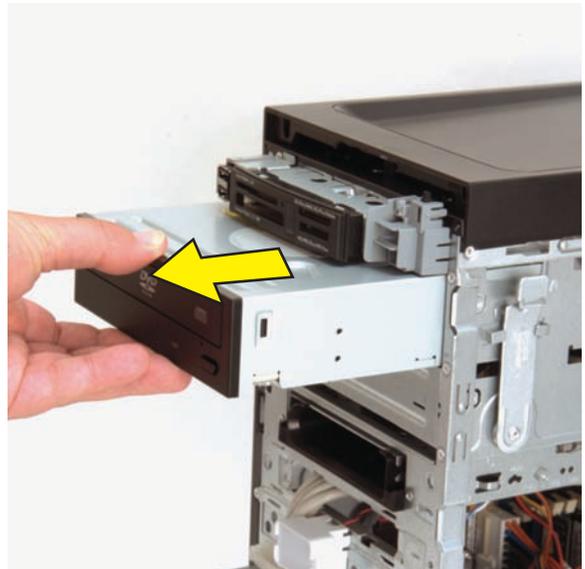
- Plugs with a latch:



For plugs with a latch, press the latch (**1** or **3**) in the center of each plug, and then pull the plug (**2** or **4**) from the connector.



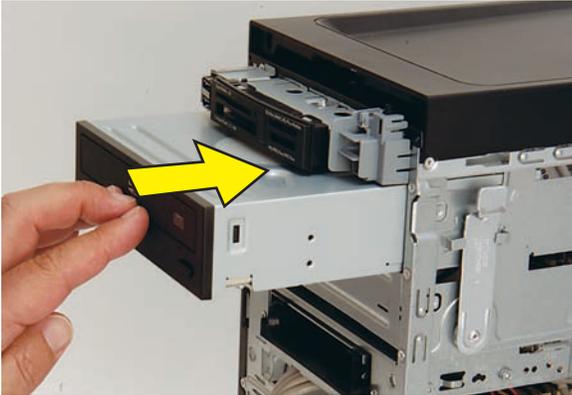
**14** Pull the drive completely out through the front of the computer.



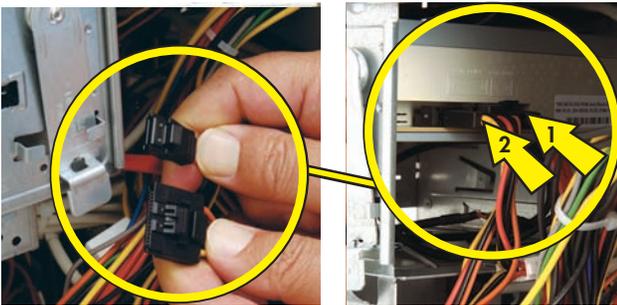
# Replacing an Optical Disc Drive

**IMPORTANT:** The new (replacement) part may not look the same as the original part, due to different manufacturers or models. Hewlett-Packard always provides quality parts that meet or exceed your original computer specifications.

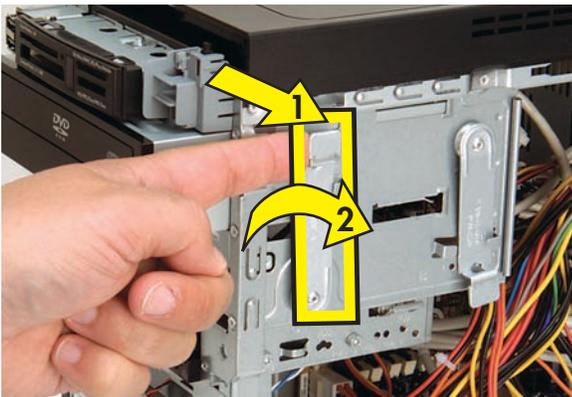
- 1 Insert the drive partway into the computer bay.



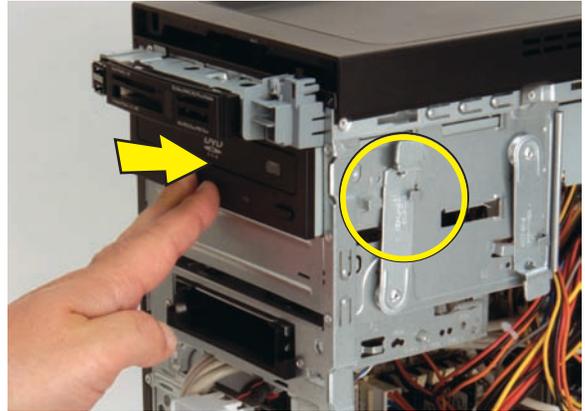
- 2 Connect the data (1) and power (2) cables to the back of the drive.



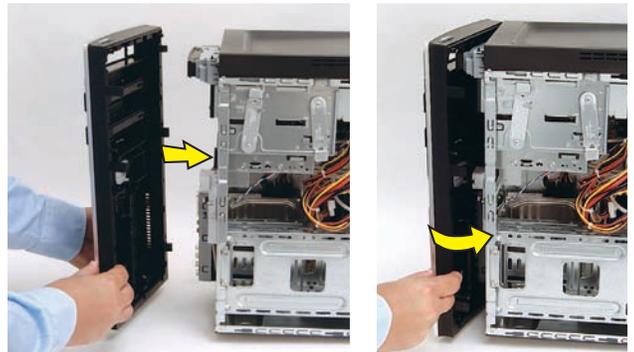
- 3 Pull out the optical drive latch (1), swing it to the right (2), and release it into the hole labeled 2 on the computer.



- 4 Push the drive completely into the computer, until the optical drive latch locks it into place in the hole labeled 2 on the computer.



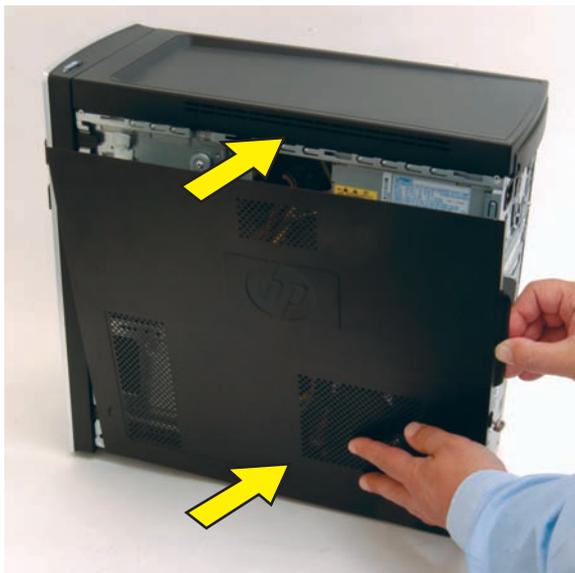
- 5 Hold the front panel over the computer, and then press the left side of the panel, inserting the tabs into the computer. Swing the right side of the panel toward the computer, and then press it into the computer.



- 6 Hold the side panel over the side of the computer with the front edge of the panel about 2.5 cm (1 inch) from the front of the computer.



- 7 Place the bottom of the panel on the computer, inserting the tabs on the inside of the panel into the rail slots on the computer. Swing the top of the panel toward the computer, inserting the top tabs into the rail slots.



- 8 Slide the side panel toward the front of the computer into place.



- 9 Tighten the side panel thumbscrew on the back of the computer.



- 10 Reconnect all peripherals and cables, and then turn on the computer.



**REPLACEMENT COMPLETED**





## Removing and Replacing a Hard Disk Drive



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# Removing and Replacing a Hard Disk Drive



25–45 minutes

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## Before You Begin

Observe the following requirements before removing and replacing a hard disk drive.

After you replace the operating system hard disk drive, you may need to perform a system recovery. For detailed system recovery steps, refer to the documentation that came with your computer.

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**IMPORTANT:** A hard disk drive is extremely sensitive to shock impact. Do not bang or drop it. Do not touch the circuit board. Static electricity can damage the drive.

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### Tools Needed

- Flathead screwdriver

You can use a flathead screwdriver with the following screw (Torque screw).



**CAUTION:** Static electricity can damage the electronic components inside the computer. Discharge static electricity by touching the metal cage of the computer before touching any internal parts or electronic components.

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### WARNING:



- **Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.**
  - **Avoid touching sharp edges inside the computer.**
- 

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**NOTE:** Computer features may vary by model.

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## Removing a Hard Disk Drive

- 1 Remove the Pocket Media Drive, if it is present. Remove the Personal Media Drive, if it is present.
- 2 Turn off the computer.
- 3 Disconnect all peripherals and cables from the front and the back of the computer. Disconnect the power cord last.



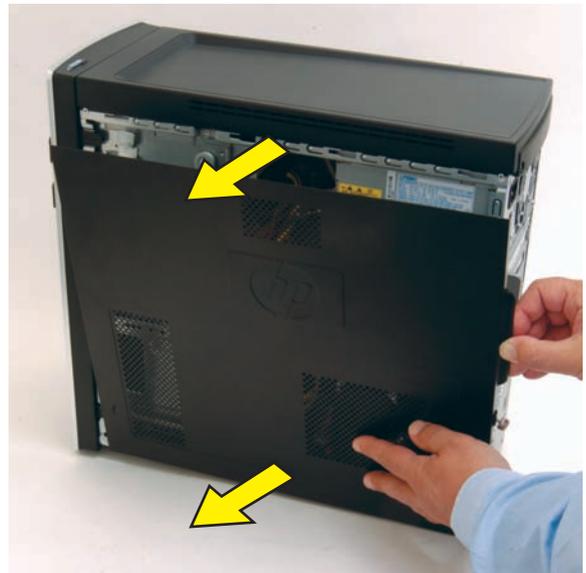
- 4 Loosen the side panel thumbscrew on the back of the computer.



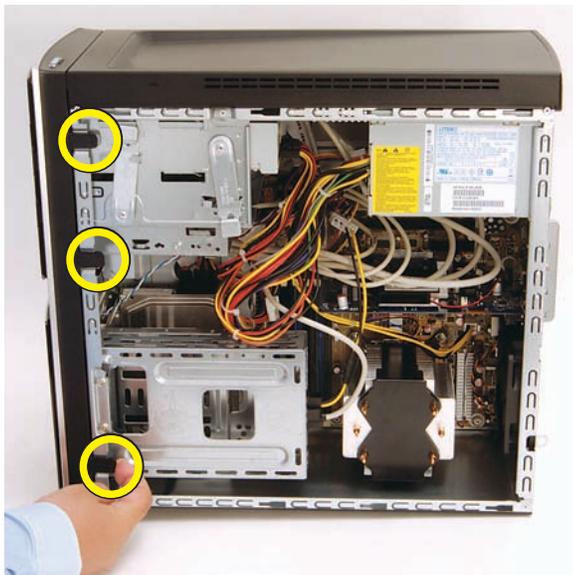
- 5 Grasp the handle, and pull the side panel about 2.5 cm (1 inch) toward the back of the computer to release it.



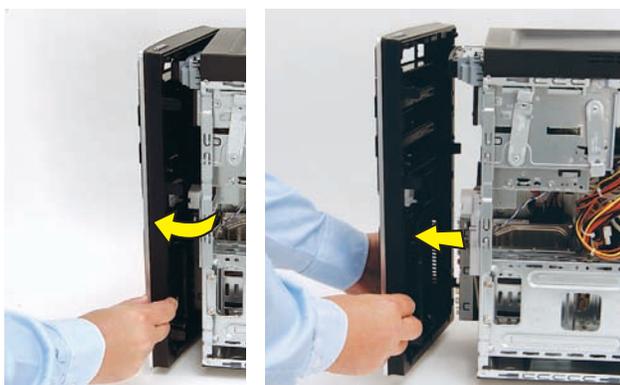
- 6 Tilt out the top of the side panel, and then lift the panel from the computer.



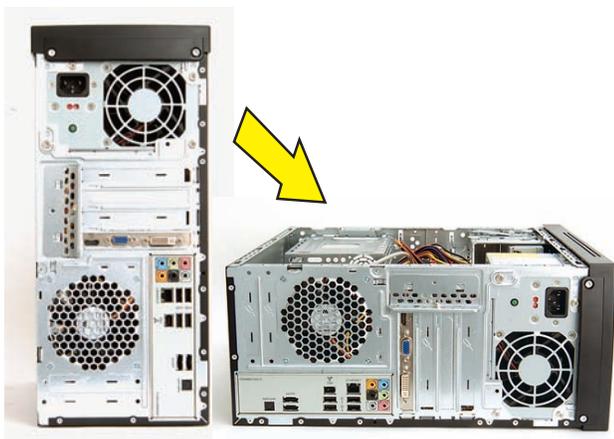
- 7** Locate the three tabs that secure the front panel to the computer. Pull each of the tabs out slightly, away from the computer, to release the panel.



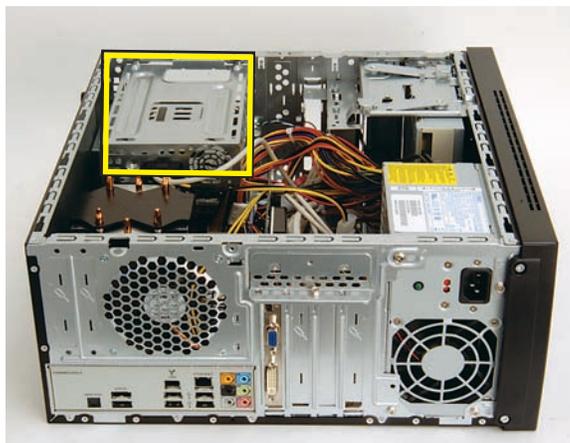
- 8** Swing the front panel open toward the left, and then lift it off the computer.



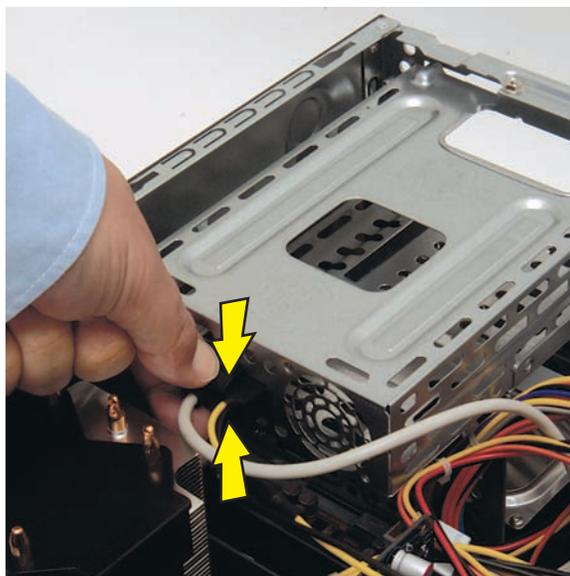
- 9** Lay the computer on the side.



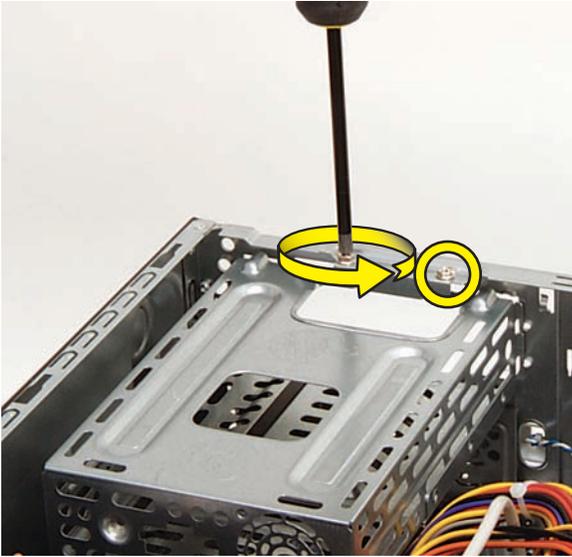
- 10** Locate the hard disk drive cage inside the computer.



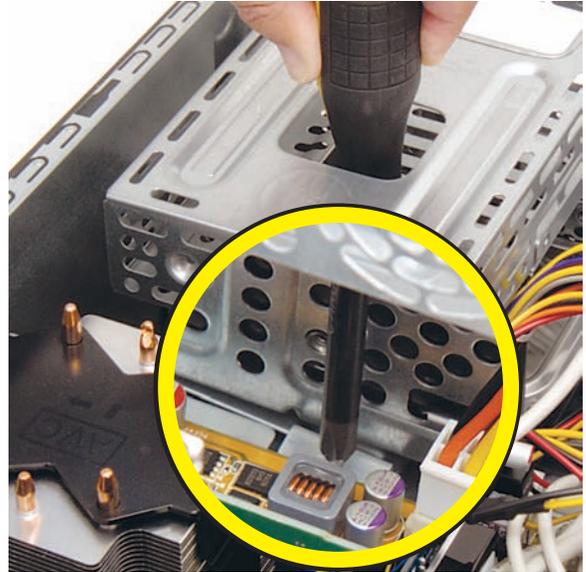
- 11** Squeeze the top and bottom of the PMD connector and remove it from the top cage.



**12** Remove the two screws that secure the drive cage in the computer.



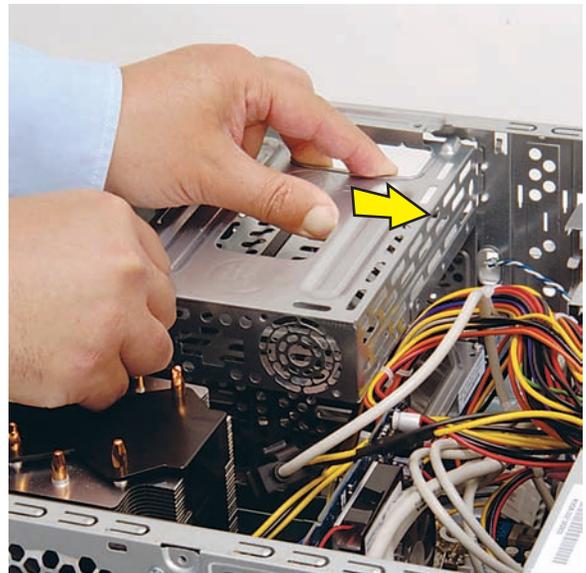
**14** Using the screwdriver, press the latch for the drive cage inside the computer.



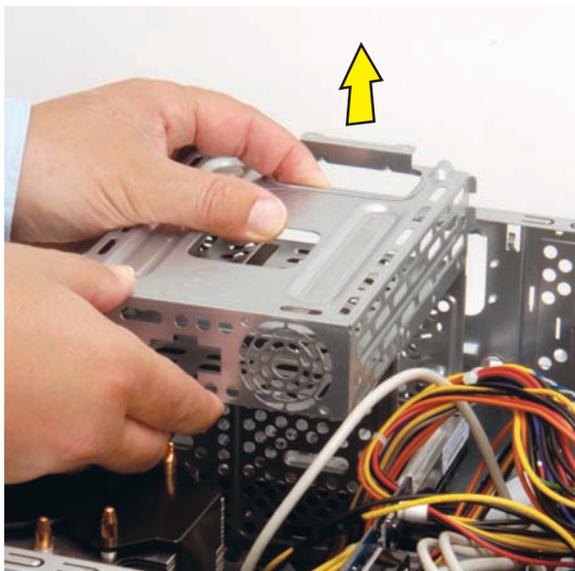
**13** Insert a long screwdriver into the opening in the cage.



**15** Slide the cage toward the top of the computer to release it.



16 Lift the cage partway out of the computer.



17 Disconnect the cables from the hard disk drive in the cage:

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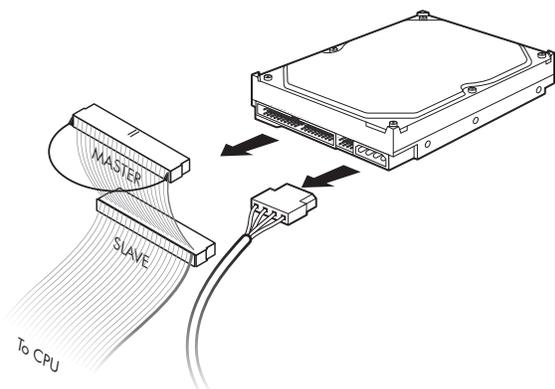
**IMPORTANT:** Recording the plug locations when there are multiple drives helps ensure you correctly replace the connections.

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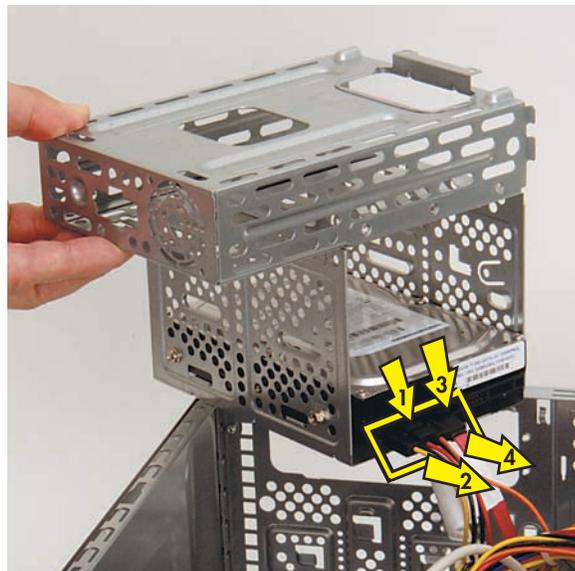
The plugs on the cables are keyed and can be inserted only when aligned properly with the connector on the drive.

In addition, some plugs have a latch that must be pressed or squeezed to release the plug while pulling it from the connector.

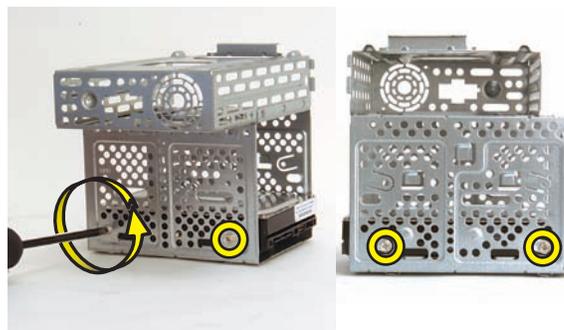
- For plugs without a latch, pull the plug straight out from the connector.



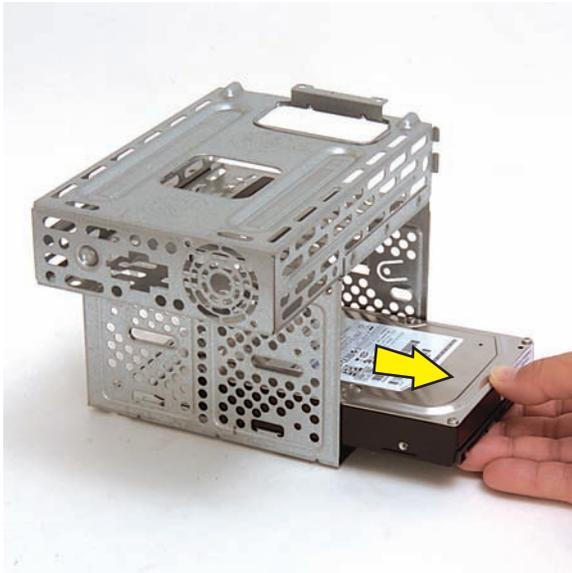
- For plugs with a latch, press the latch (**1** or **3**) in the center of each plug, and then pull the plug (**2** or **4**) from the connector.



18 Remove the four screws (two on each side) that secure the drive in the cage.



19 Slide the drive out of the cage.

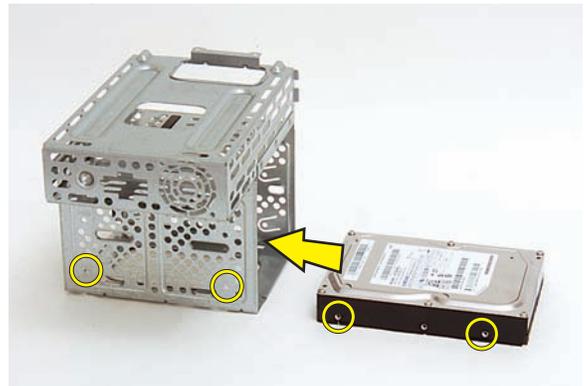


**REMOVAL COMPLETED**

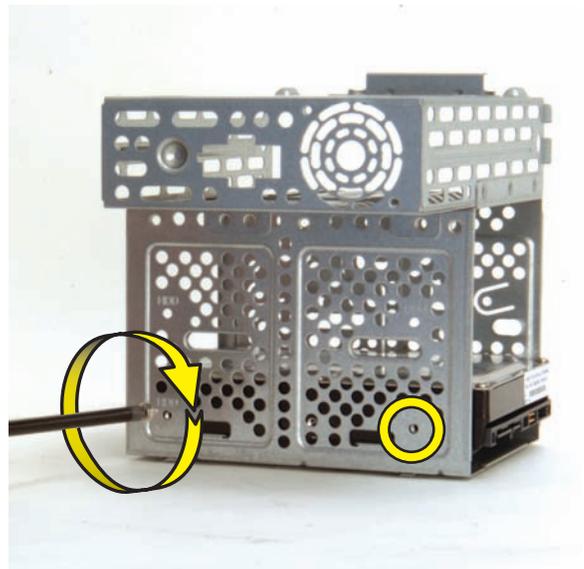
## Replacing a Hard Disk Drive

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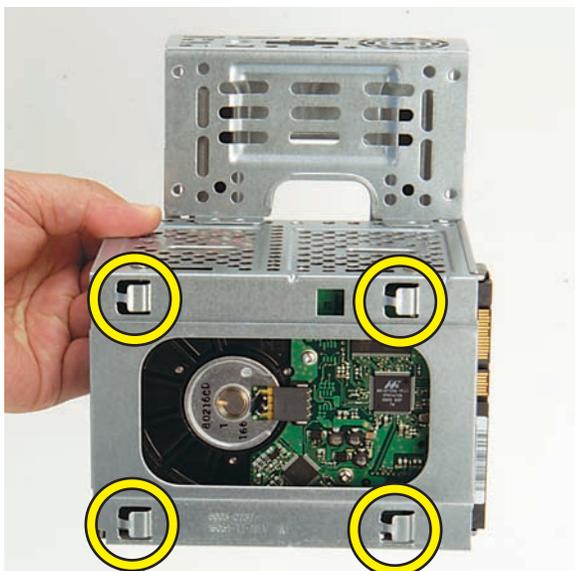
- 1 Slide the replacement drive into the drive cage, with the label facing up and the connectors toward the right (the top of the cage). Align the four screw holes in the sides of the drive with the holes in the cage.



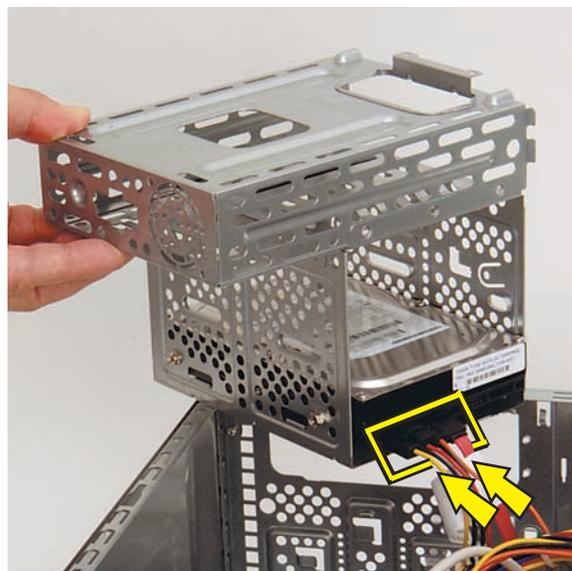
- 2 Insert and tighten the four screws that secure the drive in the cage.



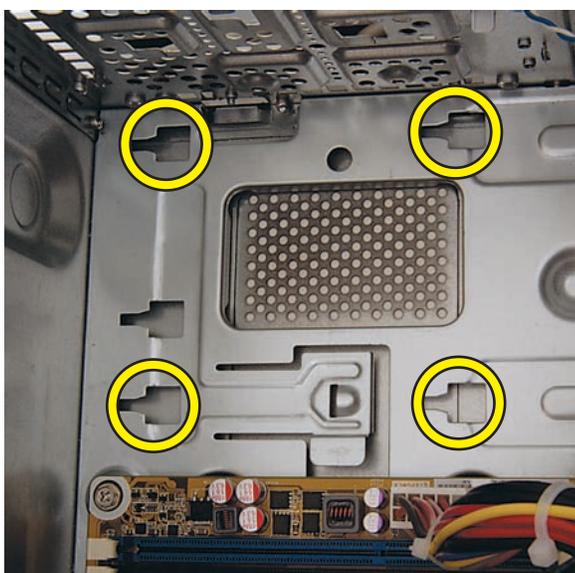
- 3** Tip up the hard disk drive cage, and locate the four tabs on the bottom.



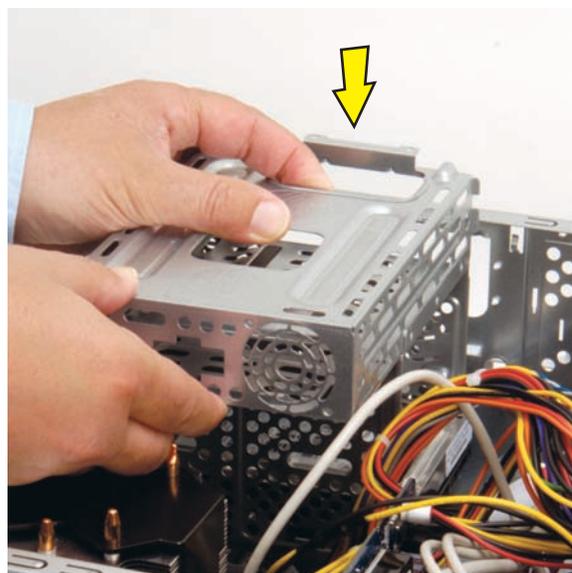
- 5** Hold the cage over the computer, and connect the hard disk drive power and data cables.



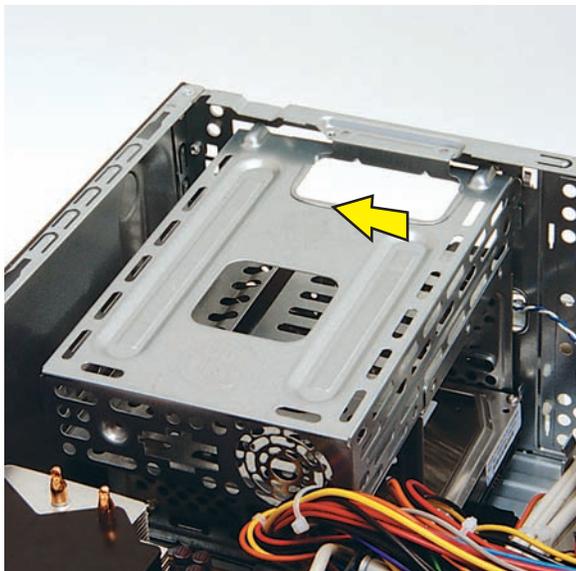
- 4** Locate the four slots inside the computer that match the tabs on the bottom of the hard disk drive cage.



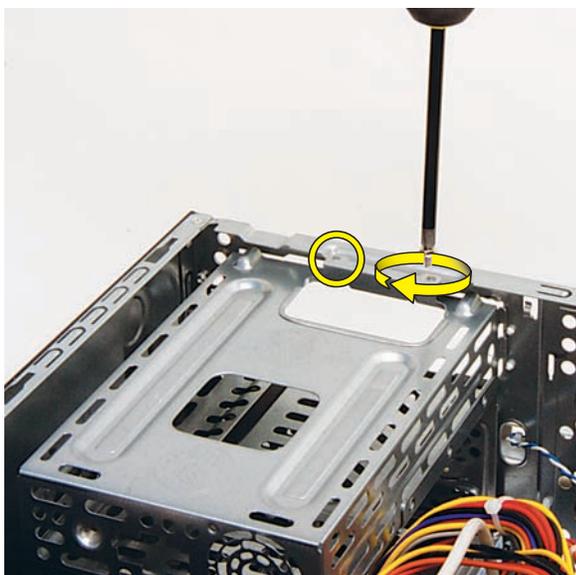
- 6** Lower the cage into the computer, inserting the four tabs on the bottom of the cage into the computer slots.



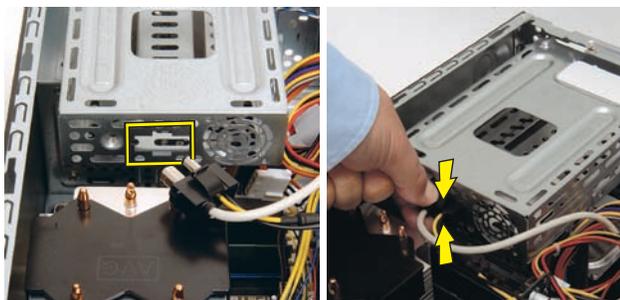
- 7** Slide the cage toward the bottom of the computer until it locks into place.



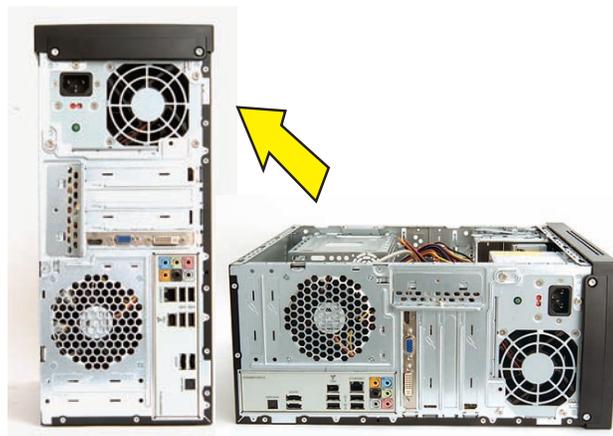
- 8** Insert and tighten the two screws that secure the cage in the computer.



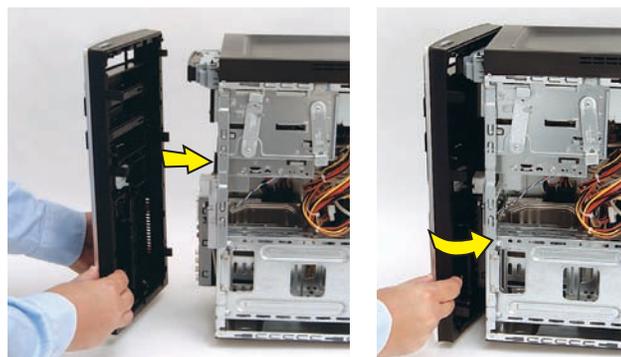
- 9** Squeeze the top and bottom of the PMD connector and insert it into the top cage.



- 10** Set the computer upright.



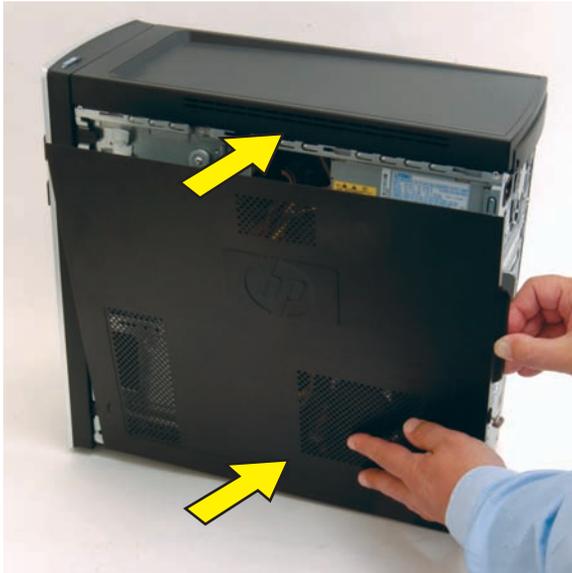
- 11** Hold the front panel over the computer, and then press the left side of the panel, inserting the tabs into the computer. Swing the right side of the panel toward the computer, and then press it into the computer.



- 12** Hold the side panel over the side of the computer with the front edge of the panel about 2.5 cm (1 inch) from the front of the computer.



**13** Place the bottom of the panel on the computer, inserting the tabs on the inside of the panel into the rail slots on the computer. Swing the top of the panel toward the computer, inserting the top tabs into the rail slots.



**15** Tighten the side panel thumbscrew on the back of the computer.



**14** Slide the side panel toward the front of the computer into place.



**16** Reconnect all peripherals and cables, and then turn on the computer.



**REPLACEMENT COMPLETED**



## Removing and Replacing an Add-in Card



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# Removing and Replacing an Add-in Card



15–25 minutes

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## Before You Begin

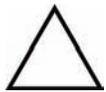
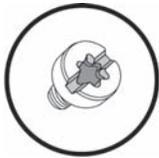
Observe the following requirements before removing and replacing an add-in card.



### Tools Needed

- Flathead screwdriver

You can use a flathead screwdriver with the following screw (Torque screw).



**CAUTION:** Static electricity can damage the electronic components inside the computer. Discharge static electricity by touching the metal cage of the computer before touching any internal parts or electronic components.

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### WARNING:

- **Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.**
  - **Avoid touching sharp edges inside the computer.**
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**NOTE:** Computer features may vary by model.

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## Removing an Add-in Card

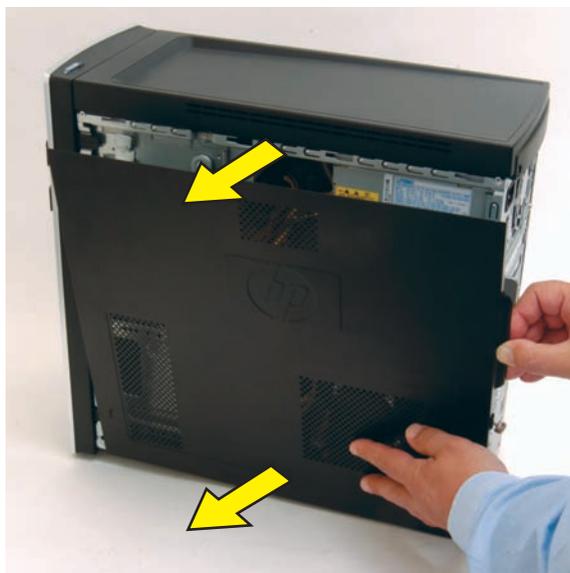
- 1 Remove the Pocket Media Drive, if it is present. Remove the Personal Media Drive, if it is present.
- 2 Turn off the computer.
- 3 Disconnect all peripherals and cables from the front and the back of the computer. Disconnect the power cord last.



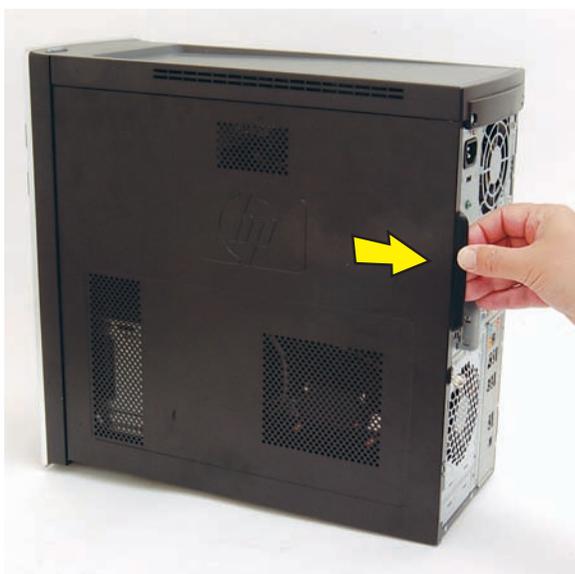
- 4 Loosen the side panel thumbscrew on the back of the computer.



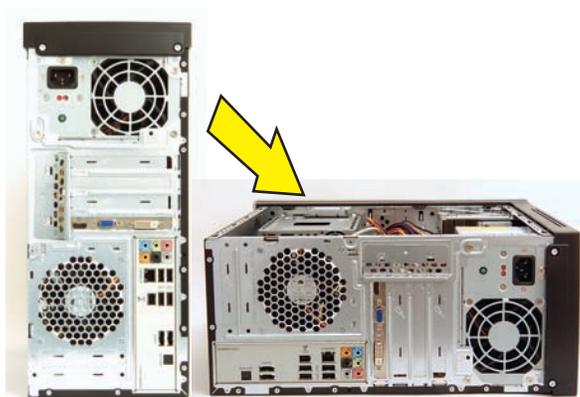
- 6 Tilt out the top of the side panel, and then lift the panel from the computer.



- 5 Grasp the handle, and pull the side panel about 2.5 cm (1 inch) toward the back of the computer to release it.



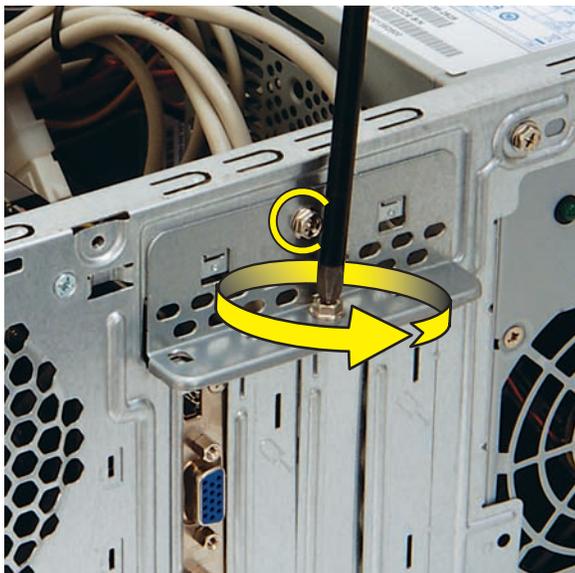
- 7 Lay the computer on the side.



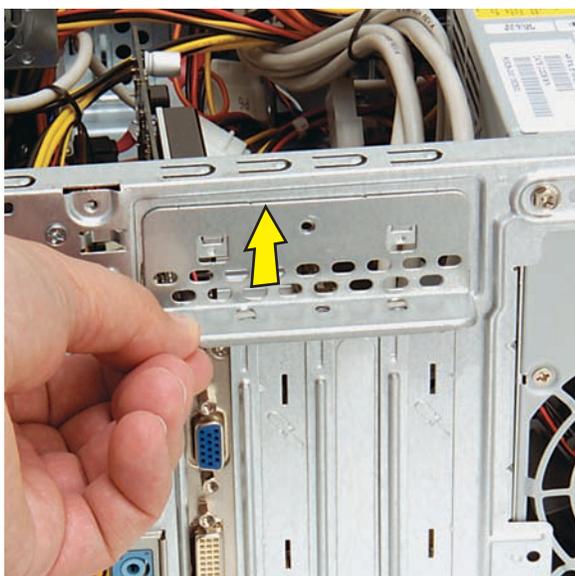
- 8 Locate the add-in cards on the back of the computer. Identify the one you want to replace.



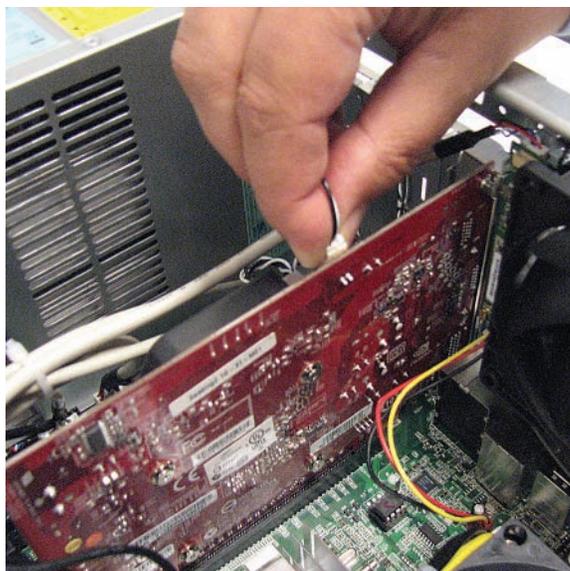
- 9 On the back of the computer, remove the screw from the bracket cover for the add-in cards. If it is present, also remove the additional screw that secures a large graphics card.



- 10 Lift off the bracket cover.



- 11 If present, disconnect any cables connected to the card.

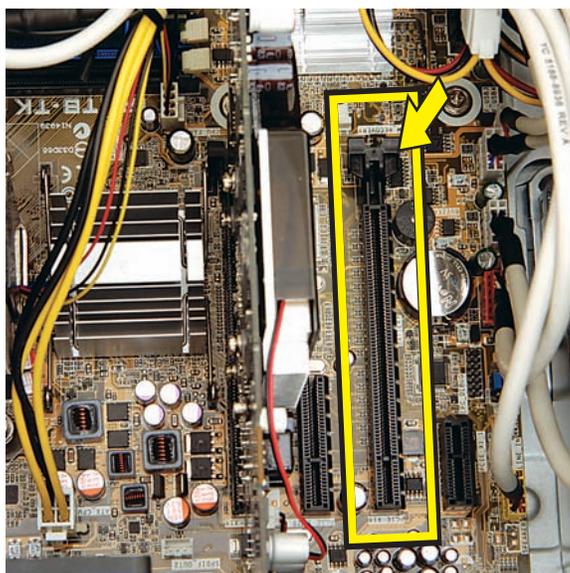


- 12 Look at the add-in card socket for a release latch, which is present on some sockets.

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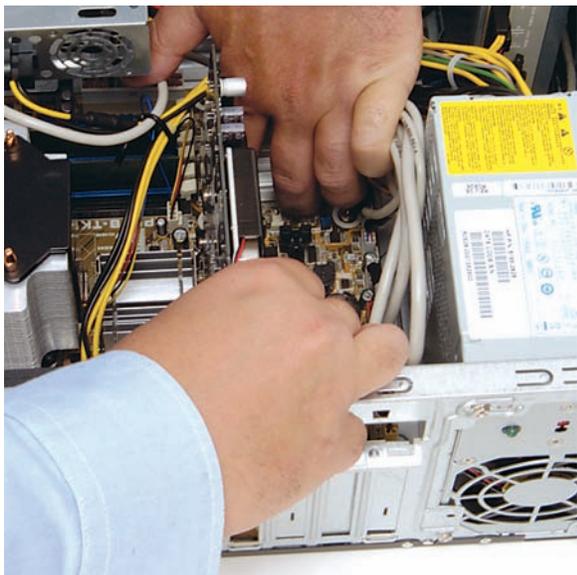
**IMPORTANT:** Some sockets have a release latch that must be disengaged to remove the card from the socket. The release latch style may vary. This example shows a release pad that must be pushed down as you lift the card. A release lever must be pushed out from the socket as you lift the card.

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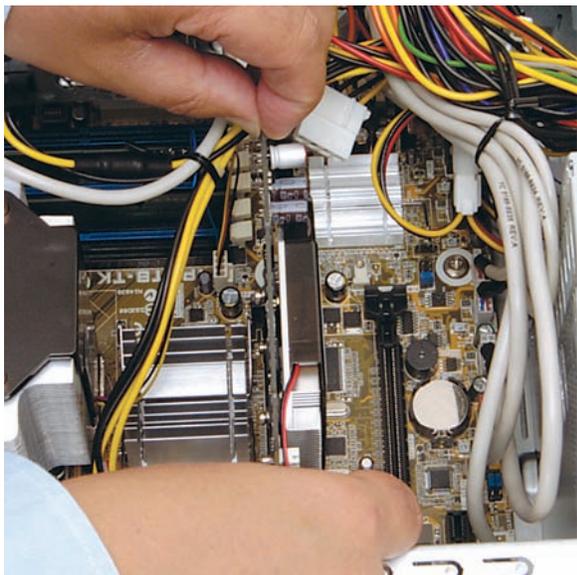


### 13 Remove the card:

- If there is a release latch, place your finger on the latch and push down on the pad (or out on the lever) as you lift the card from the socket.



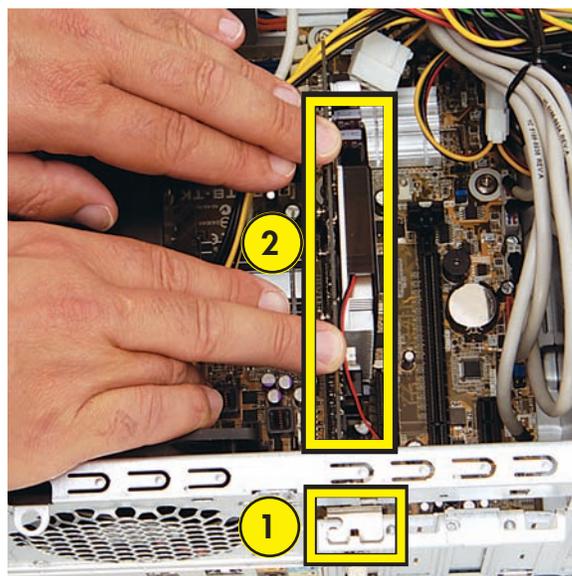
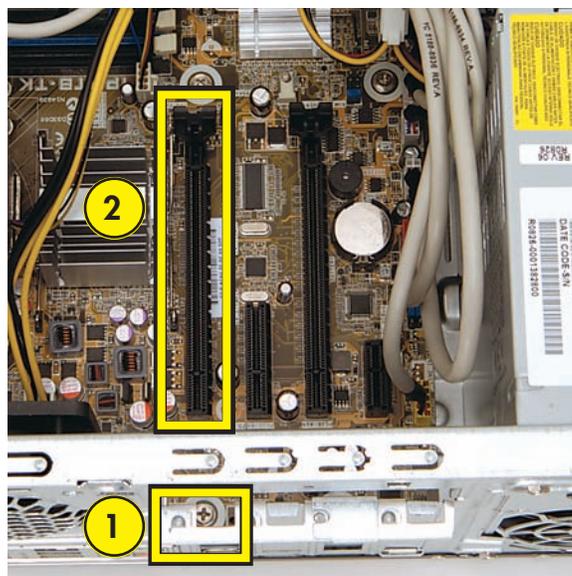
- If there is no release latch, rock the card to free it, and then lift the card from the socket.



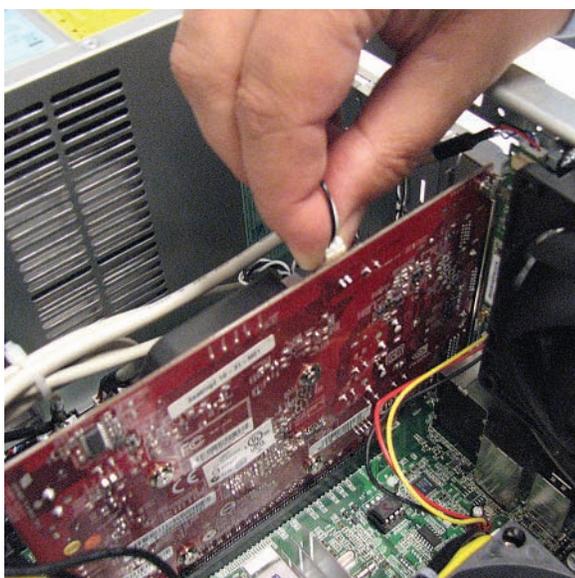
## Replacing an Add-in Card

**IMPORTANT:** The new (replacement) part may not look the same as the original part, due to different manufacturers or models. Hewlett-Packard always provides quality parts that meet or exceed your original computer specifications.

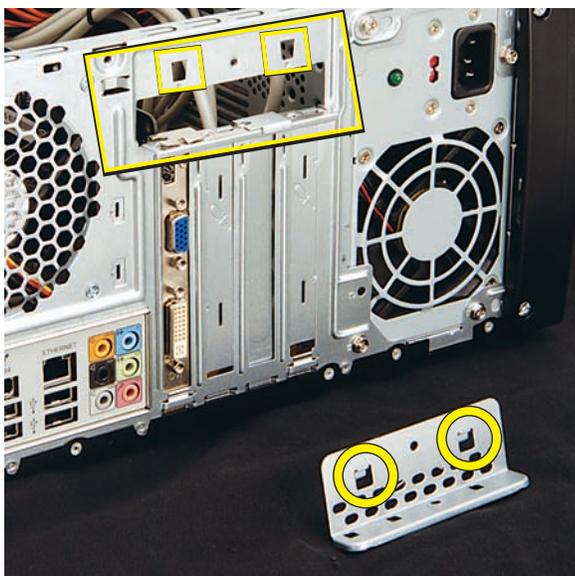
- 1 Align the edge of the add-in card with the open slot (1) in the computer, and then press the card straight down until it is fully seated in the socket (2).



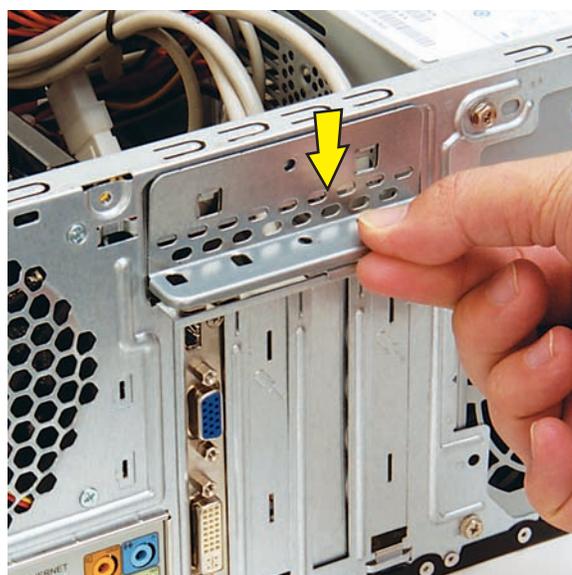
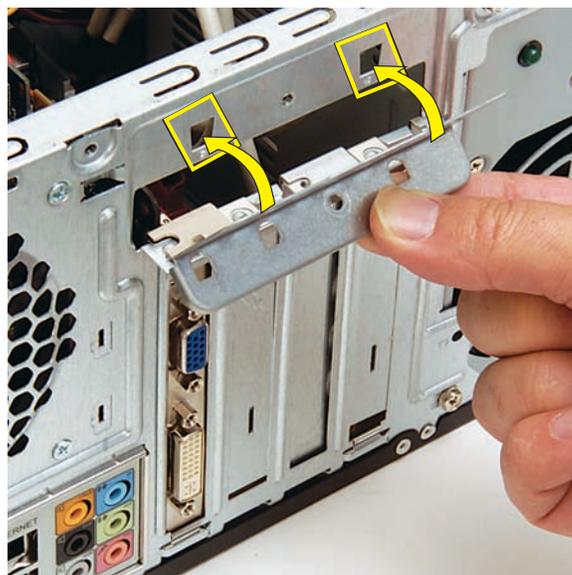
**2** Connect any cables to the card.



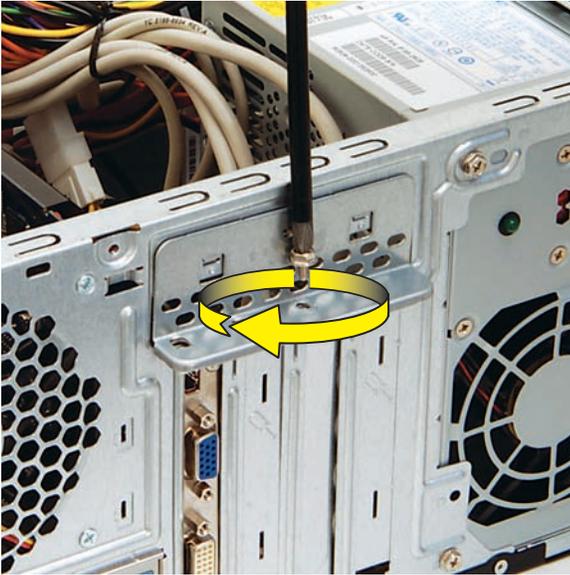
**3** Look at the bracket cover for the two hooks that fit over the two slots on the back of the computer.



**4** Replace the bracket cover onto the back of the computer: Align the bracket cover hooks over the slots on the computer, and then slide the bracket cover into place against the add-in cards.



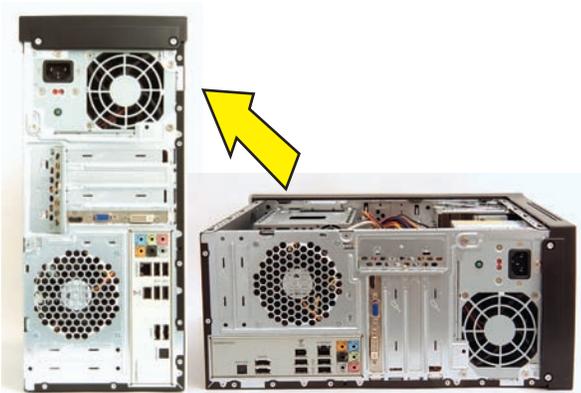
- 5 Insert and tighten the bracket cover screw. If it is present, also insert and tighten the additional screw that secures a large graphics card.



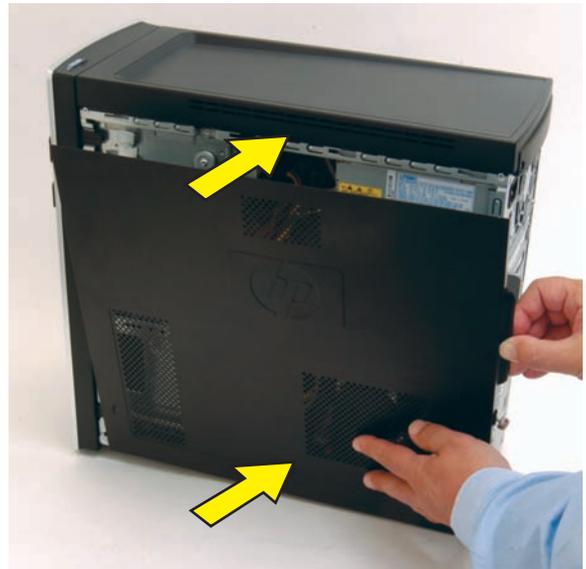
- 7 Hold the side panel over the side of the computer with the front edge of the panel about 2.5 cm (1 inch) from the front of the computer.



- 6 Set the computer upright.



- 8 Place the bottom of the panel on the computer, inserting the tabs on the inside of the panel into the rail slots on the computer. Swing the top of the panel toward the computer, inserting the top tabs into the rail slots.



**9** Slide the side panel toward the front of the computer into place.



**11** Reconnect all peripherals and cables, and then turn on the computer.



**REPLACEMENT COMPLETED**

**10** Tighten the side panel thumbscrew on the back of the computer.





## Removing and Replacing Memory



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# Removing and Replacing Memory



30–45 minutes

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## Before You Begin

Use the product specification for your model to find the correct type of DIMM (dual in-line memory module) for your computer and the maximum memory amount.

Memory upgrades may not be needed. Many computers already have the maximum amount of memory installed.

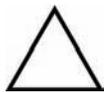
Observe the following requirements before removing and replacing memory.



### Tools Needed

- Flathead screwdriver

You can use a flathead screwdriver with the following screw (Torque screw).



**CAUTION:** Static electricity can damage the electronic components inside the computer. Discharge static electricity by touching the metal cage of the computer before touching any internal parts or electronic components.



### WARNING:

- **Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.**
- **Avoid touching sharp edges inside the computer.**

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**NOTE:** Computer features may vary by model.

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## Removing Memory

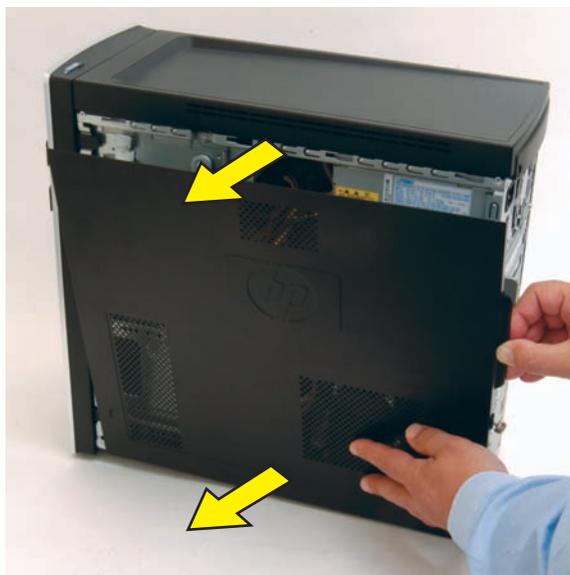
- 1 Remove the Pocket Media Drive, if it is present. Remove the Personal Media Drive, if it is present.
- 2 Turn off the computer.
- 3 Disconnect all peripherals and cables from the front and the back of the computer. Disconnect the power cord last.



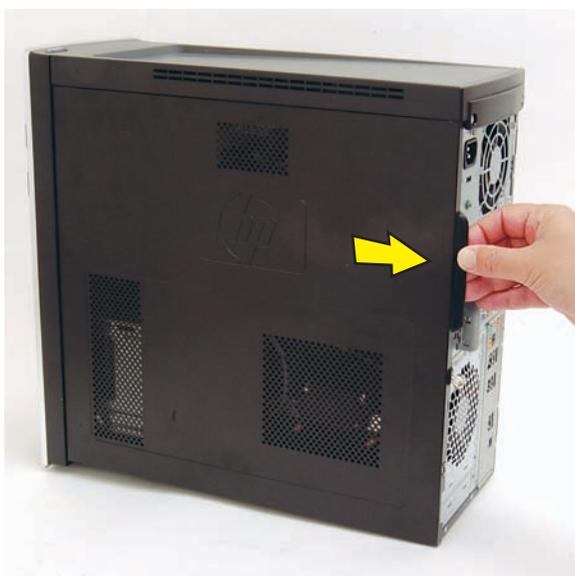
- 4 Loosen the side panel thumbscrew on the back of the computer.



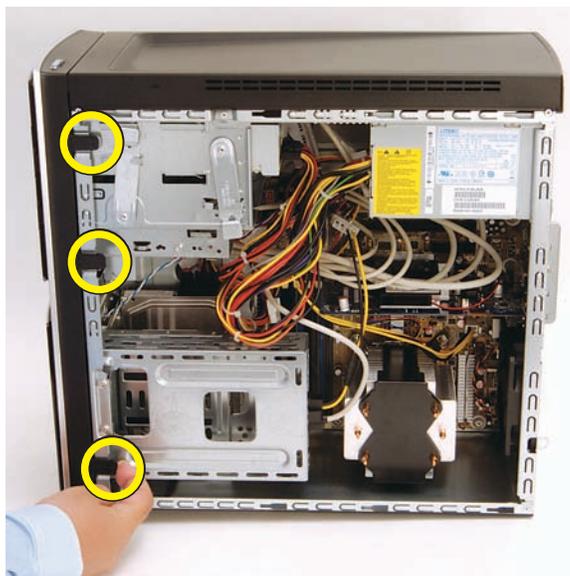
- 6 Tilt out the top of the side panel, and then lift the panel from the computer.



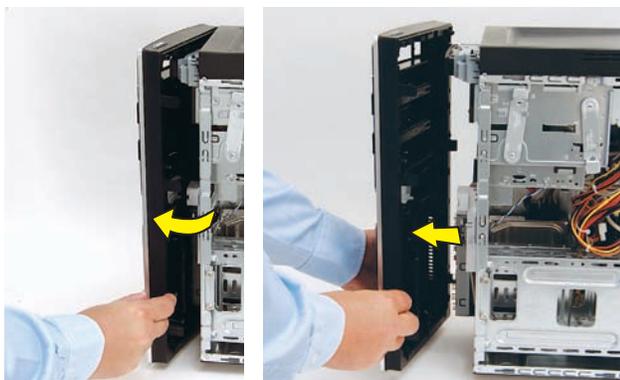
- 5 Grasp the handle, and pull the side panel about 2.5 cm (1 inch) toward the back of the computer to release it.



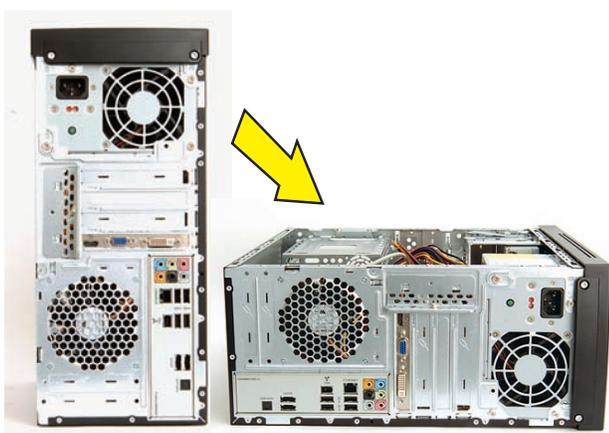
- 7 Locate the three tabs that secure the front panel to the computer. Pull each of the tabs out slightly, away from the computer, to release the panel.



- 8** Swing the front panel open toward the left, and then lift it off the computer.



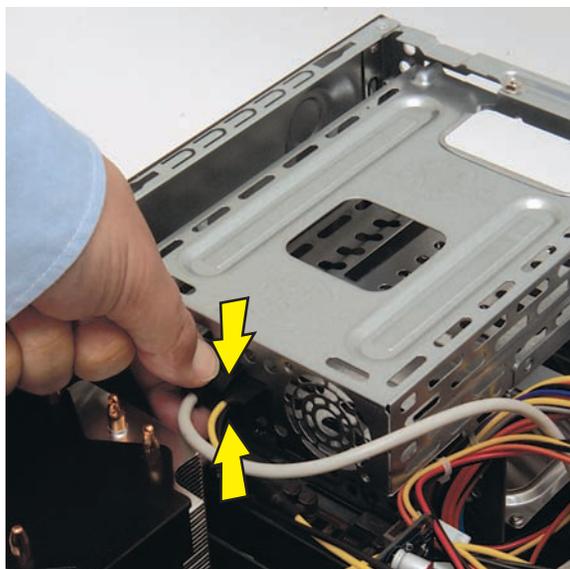
- 9** Lay the computer on its side.



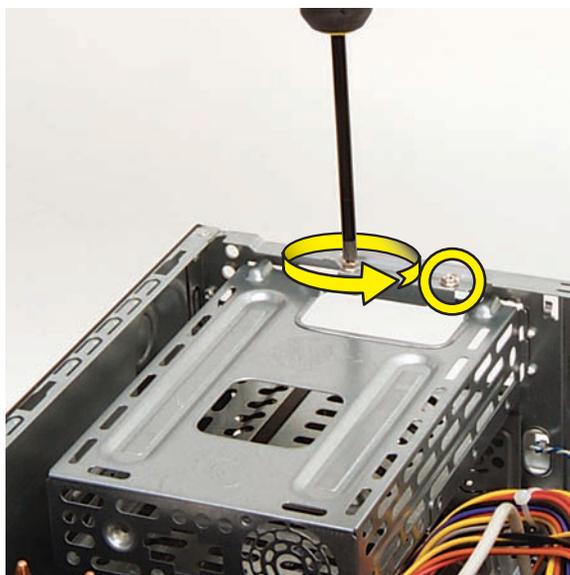
- 10** Locate the hard disk drive cage inside the computer. You must remove the cage to access memory.



- 11** Squeeze the top and bottom of the PMD connector and remove it from the top cage.



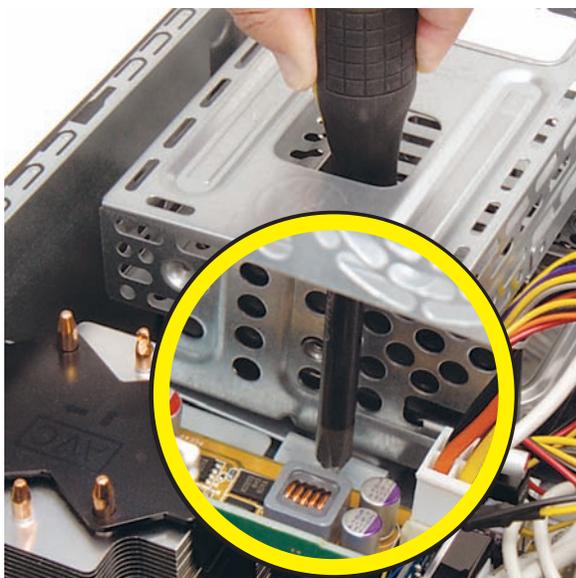
- 12** Remove the two screws that secure the drive cage in the computer.



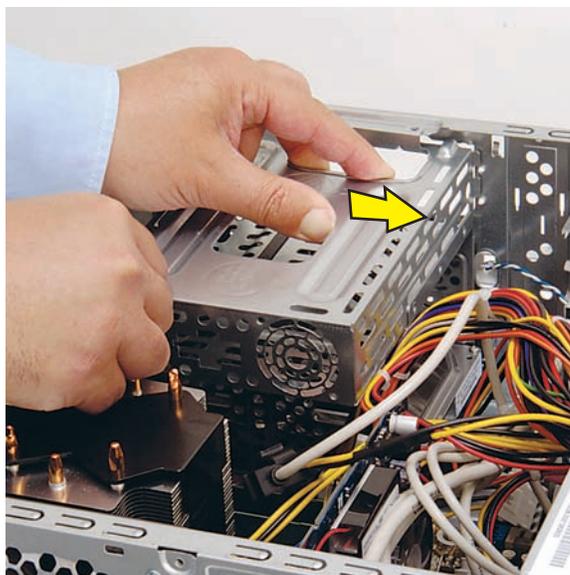
**13** Insert a long screwdriver into the opening in the cage.



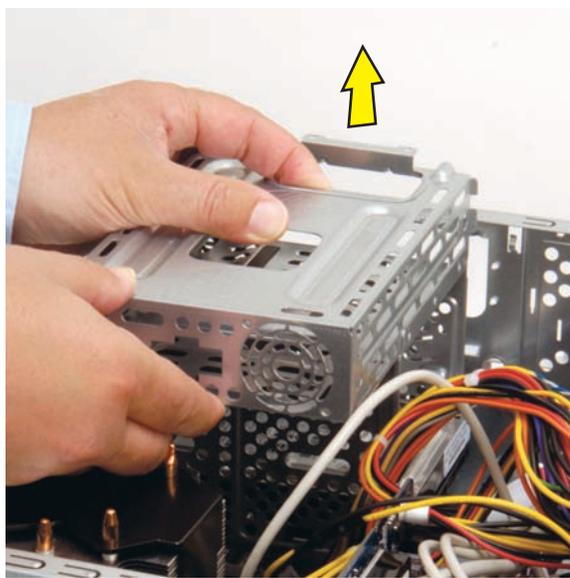
**14** Using the screwdriver, press the latch for the drive cage inside the computer.



**15** Slide the cage toward the top of the computer to release it.



**16** Lift the cage partway out of the computer.



**17** Disconnect the cables from the hard disk drive in the cage:

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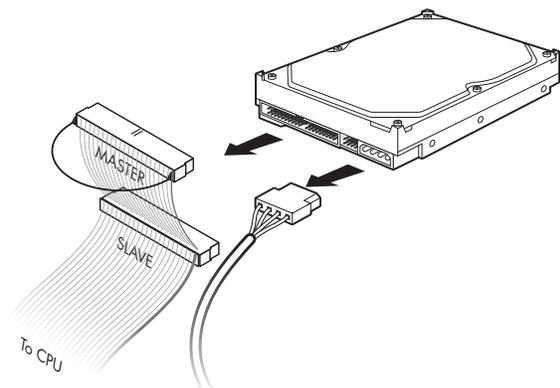
**IMPORTANT:** Recording the plug locations when there are multiple drives helps ensure you correctly replace the connections.

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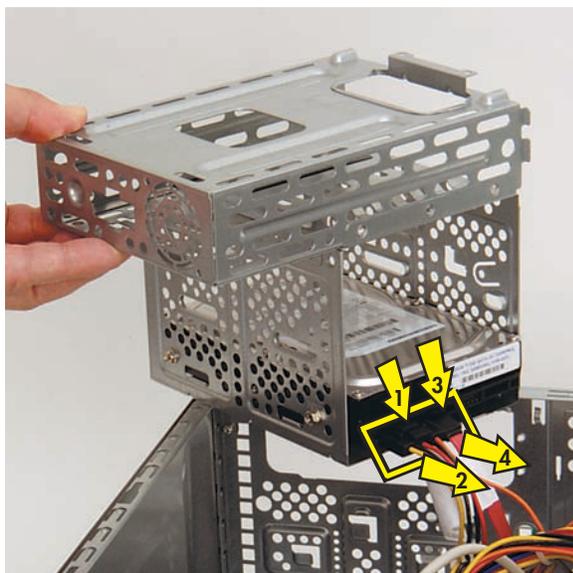
The plugs on the cables are keyed and can be inserted only when aligned properly with the connector on the drive.

In addition, some plugs have a latch that must be pressed or squeezed to release the plug while pulling it from the connector.

- For plugs without a latch, pull the plug straight out from the connector.



- For plugs with a latch, press the latch (**1** or **3**) in the center of each plug, and then pull the plug (**2** or **4**) from the connector. Set the cage aside.

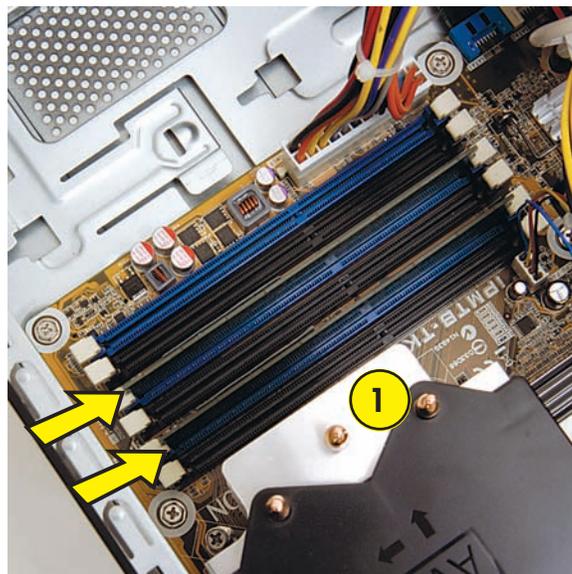


**18** Locate the memory sockets on your computer motherboard. The memory sockets in the computer may be paired sets, coded blue and black. The blue sockets are filled first, starting with the largest capacity module placed in the socket closest to the processor (**1**) on the motherboard. This illustration shows two memory modules installed in blue sockets.

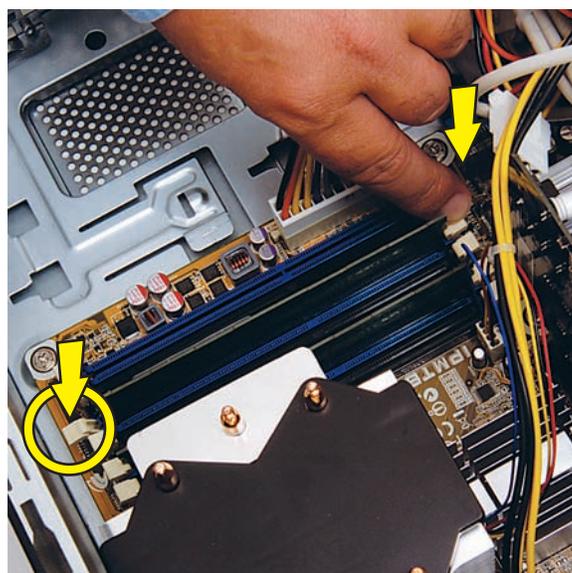
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**NOTE:** The location and number of memory sockets may vary with the motherboard model in your computer.

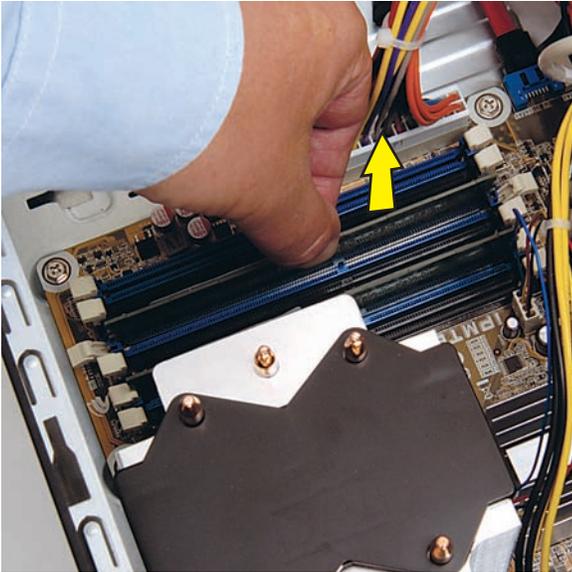
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**19** Push down the retaining clip on each end of the memory socket to release the memory module.



- 20** Touching only the top edge of the memory module, lift it out of the socket.



## Replacing Memory

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**IMPORTANT:** The new (replacement) part may not look the same as the original part, due to different manufacturers or models. Hewlett-Packard always provides quality parts that meet or exceed your original computer specifications.

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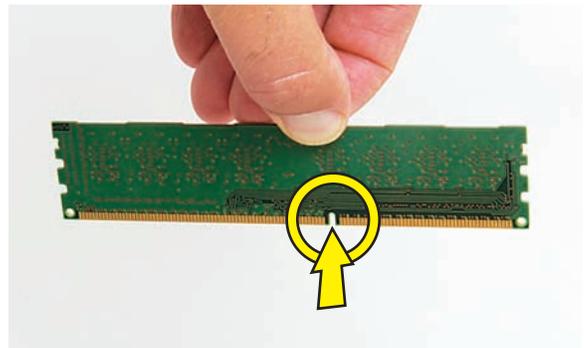
**NOTE:** Install the memory modules into the blue sockets first, starting with the largest capacity module placed in the socket closest to the processor on the motherboard.

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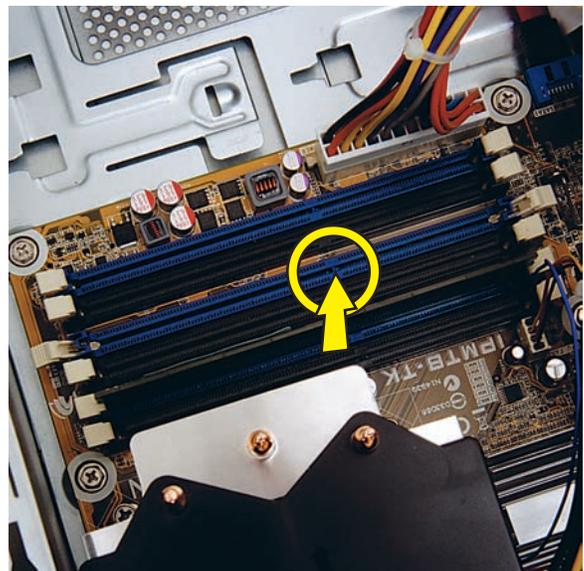
- 1** Touching only the top edge of the memory module, locate the notch on the bottom edge.

**NOTE:** Each type of memory has a different notch position. Incompatible memory modules cannot be installed in the memory socket.

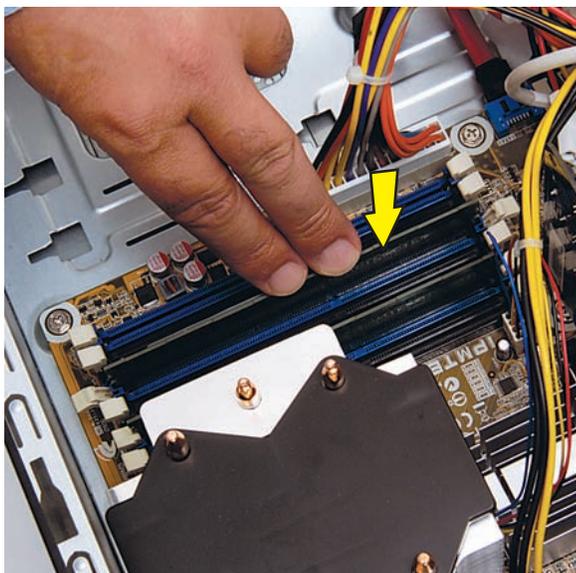
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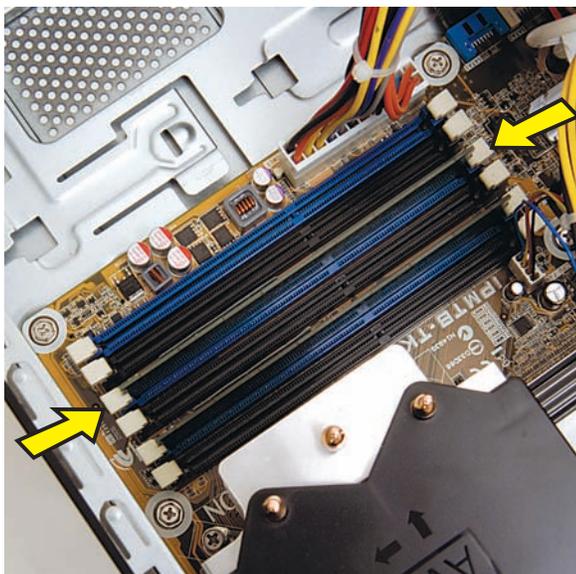
- 2** Look at the memory module socket for the tab that matches the notch on the memory module.



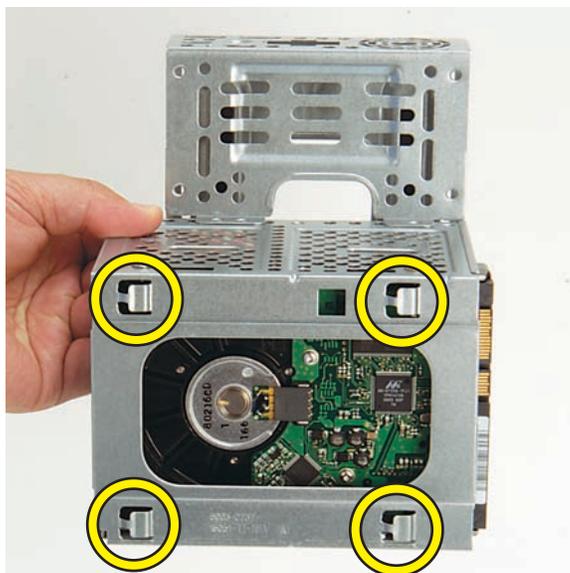
- 3** Position the memory module over the socket, aligning the notch with the tab in the socket, and then firmly press the module down into the socket...



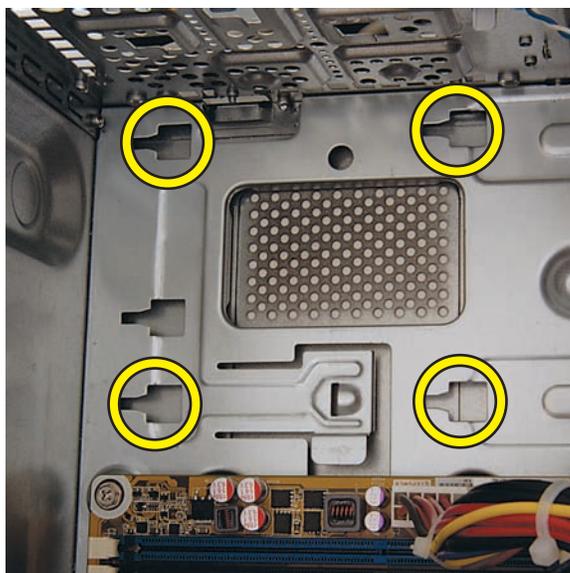
...until the retaining clips at the ends of the socket lock the module into place.



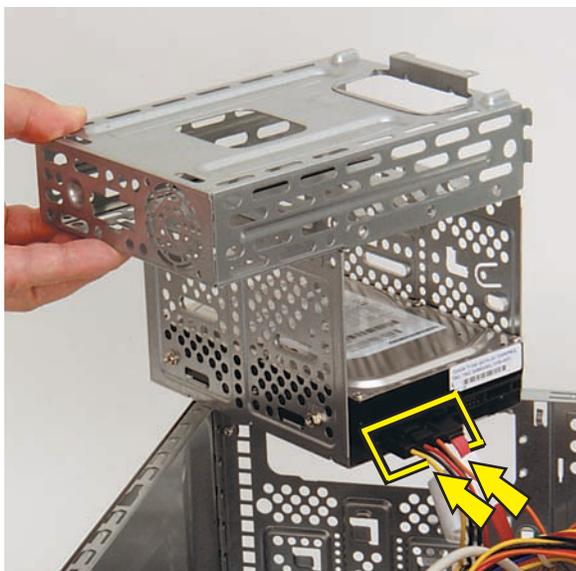
- 4** Tip up the hard disk drive cage, and locate the four tabs on the bottom.



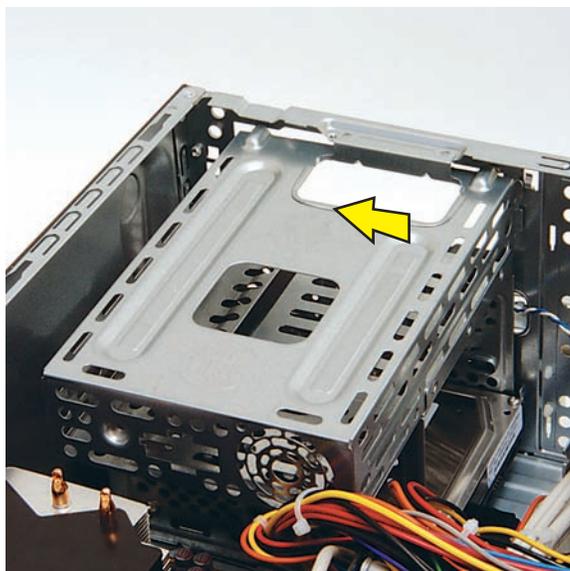
- 5** Locate the four slots inside the computer that match the tabs on the bottom of the hard disk drive cage.



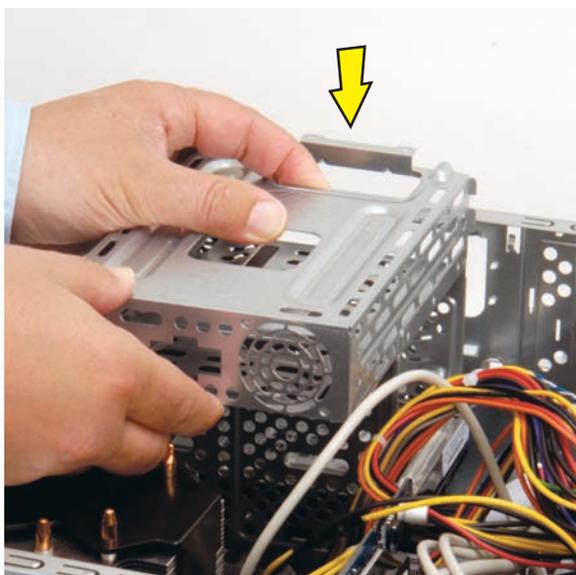
- 6 Hold the cage over the computer, and connect the hard disk drive power and data cables.



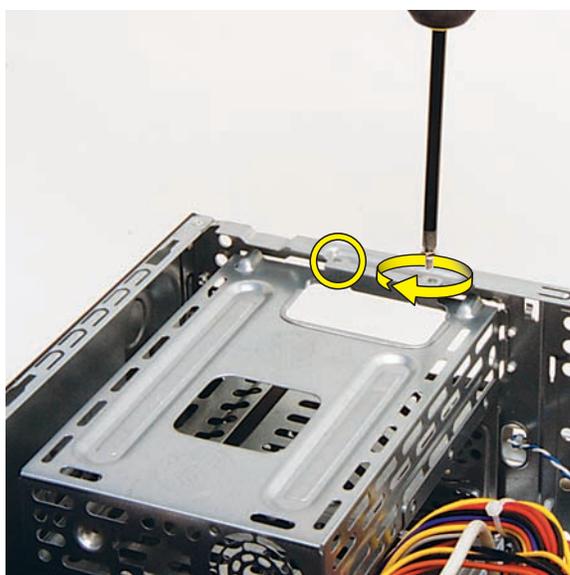
- 8 Slide the cage toward the bottom of the computer until it locks into place.



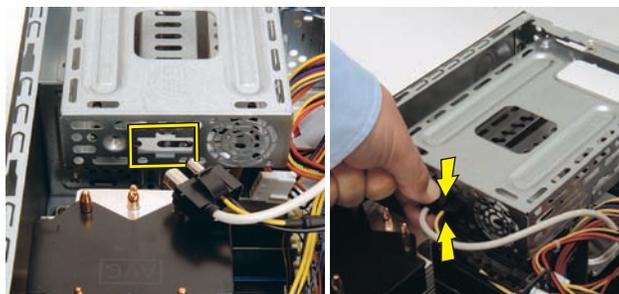
- 7 Lower the cage into the computer, inserting the four tabs on the bottom of the cage into the computer slots.



- 9 Insert and tighten the two screws that secure the cage in the computer.



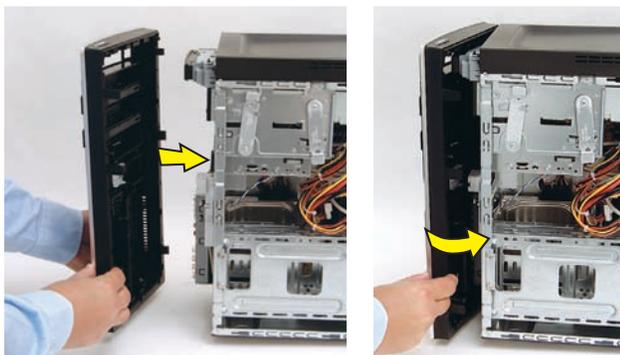
- 10 Squeeze the top and bottom of the PMD connector and insert it into the top cage.



**11** Set the computer upright.



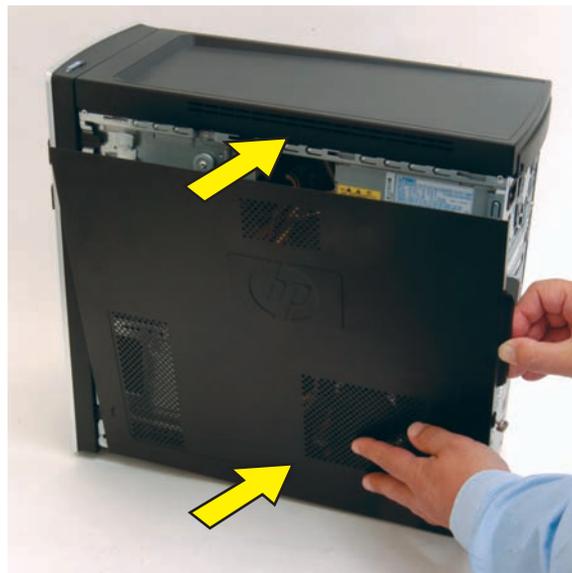
**12** Hold the front panel over the computer, and then press the left side of the panel, inserting the tabs into the computer. Swing the right side of the panel toward the computer, and then press it into the computer.



**13** Hold the side panel over the side of the computer with the front edge of the panel about 2.5 cm (1 inch) from the front of the computer.



**14** Place the bottom of the panel on the computer, inserting the tabs on the inside of the panel into the rail slots on the computer. Swing the top of the panel toward the computer, inserting the top tabs into the rail slots.



**15** Slide the side panel toward the front of the computer into place.



**16** Tighten the side panel thumbscrew on the back of the computer.



**17** Reconnect all peripherals and cables, and then turn on the computer.



**REPLACEMENT COMPLETED**

