

Identify Types of Lines

Brenda Meery

Jen Kershaw

To access the online version of this FlexBook
click the link below:

<https://flexbooks.ck12.org/user:c82fb0a2bc0f/cbook/basic-math-academic-bridge/section/7.3/primary/lesson/identify-types-of-lines-msm8/>

To access a customizable version of this book, as well as other interactive content, visit www.ck12.org

CK-12 Foundation is a non-profit organization with a mission to reduce the cost of textbook materials for the K-12 market both in the U.S. and worldwide. Using an open-source, collaborative, and web-based compilation model, CK-12 pioneers and promotes the creation and distribution of high-quality, adaptive online textbooks that can be mixed, modified and printed (i.e., the FlexBook® textbooks).

Copyright © 2023 CK-12 Foundation, www.ck12.org

The names “CK-12” and “CK12” and associated logos and the terms “FlexBook®” and “FlexBook Platform®” (collectively “CK-12 Marks”) are trademarks and service marks of CK-12 Foundation and are protected by federal, state, and international laws.

Any form of reproduction of this book in any format or medium, in whole or in sections, must be attributed according to our attribution guidelines.

<https://www.ck12info.org/about/attribution-guidelines>

Except as otherwise noted, all CK-12 Content (including CK-12 Curriculum Material) is made available to Users in accordance with the CK-12 Curriculum Materials License

<https://www.ck12info.org/curriculum-materials-license>



Complete terms for use for the CK-12 website can be found at:

<http://www.ck12info.org/terms-of-use/>

Printed: December 11, 2023 (PST)



AUTHORS

Brenda Meery

Jen Kershaw

7.3 Identify Types of Lines

FlexBooks 2.0 > VUB Math > Identify Types of Lines

Last Modified: Aug 23, 2023



[Figure 1]

Candice saw the following illustration in her math book.



[Figure 2]

She wondered how to describe the relationship between the brown **plane** and the green plane.

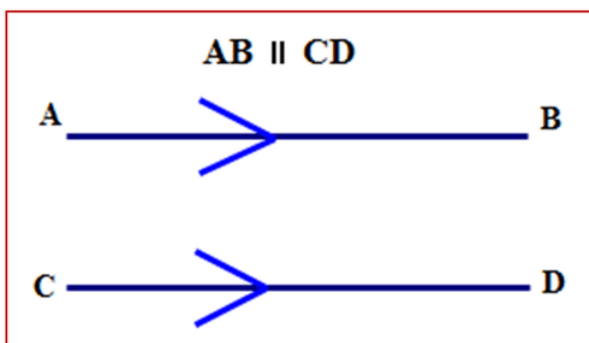
In this concept, you will learn to identify types of lines.

Parallel, Perpendicular and Intersecting Lines

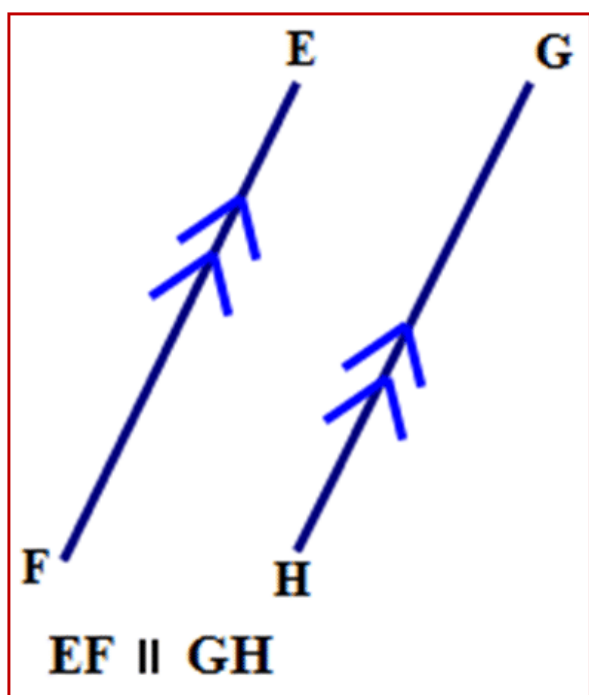
Lines are around you everywhere and you see them every day. When you drive along a highway there are lines painted on the road indicating the width of the lane, lines painted

indicating cross walks and lines indicating the **intersection** of roads. If you look up to the sky you often see lines that are vapor trails left by airplanes.

Although lines are a common occurrence in the real-world, they are special and have names. The lines painted on the road indicating the width of the driving lane are **parallel lines**. **Parallel lines** are two lines on a plane that never meet and remain the same **distance** over their entire length. The following **diagrams** show pairs of parallel lines:



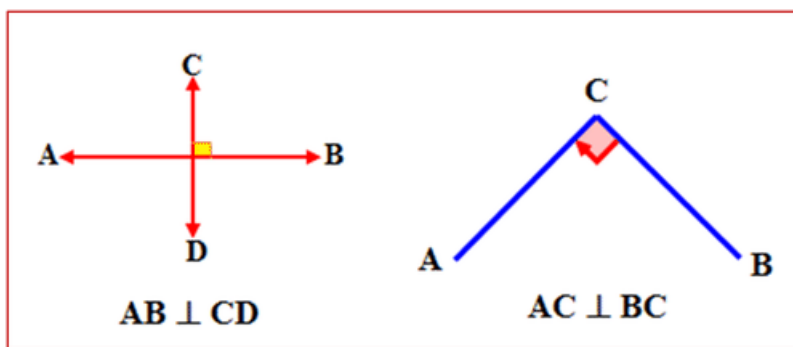
[Figure 3]



[Figure 4]

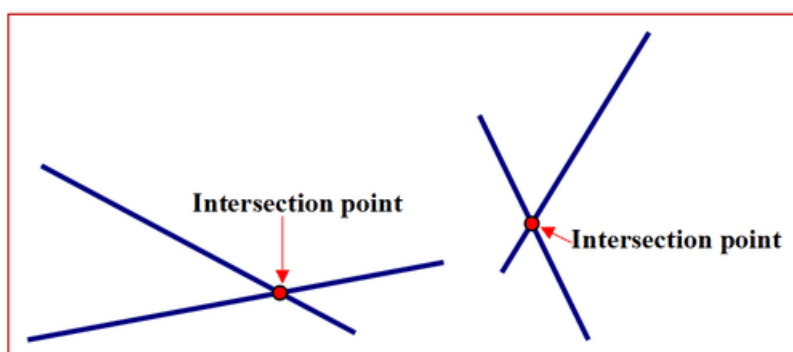
The arrows on the lines show that the lines are **parallel** to each other. When naming lines that are parallel, the symbol \parallel is used.

Straight lines that are at right **angles** to each other are called **perpendicular lines**. These lines meet each other such that a 90° angle is formed. When a Cartesian grid is drawn, the x and y axes meet at right angles. When naming lines that are **perpendicular**, the symbol \perp is used.



[Figure 5]

Straight lines that cross each other at some **point** are called **intersecting lines**. These lines will intersect at one point only over their entire length. There is no symbol to use when naming intersecting lines. The following **diagram** shows intersecting lines.



[Figure 6]

Examples

Example 1

Earlier, you were given a problem about Candice and the picture. She needs to describe the relationship between the two planes.

First, look at the two planes and write down what she knows from the picture.

The green plane and the brown plane are equidistant – the distance between them is equal over their entire length.

Next, figure out what this means with respect to the planes.

This means that the planes will never meet or intersect.

Then, state the relationship between the planes.

The planes are parallel.

Candice can now say that the green and brown planes in the picture are parallel.

Example 2

Name the type of lines represented by the following real-world situations:

i) Railroad tracks and overhead power lines.

ii) **Diagonal** distances from home plate to 2nd base and from 1st base to 3rd base of a baseball diamond.

iii) Solid double lines painted in the middle of a two-way road.

iv) Corners formed by the trim around a rectangular window.

v) **Legs** of an ironing board

Answers:

i) Railroad tracks and overhead power lines.

Parallel lines.

ii) Diagonal distances from home plate to 2nd base and from 1st base to 3rd base of a baseball diamond.

Perpendicular lines.

iii) Solid double lines painted in the middle of a two-way road.

Parallel lines.

iv) Corners formed by the trim around a rectangular window.

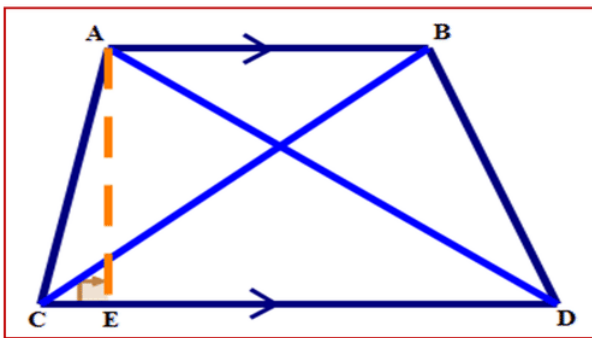
Perpendicular lines.

v) Legs of an ironing board.

Intersecting lines

Example 3

For the following regular **trapezoid** name, with proper symbols, one pair of parallel lines, one pair of intersecting lines and one pair of perpendicular lines.



[Figure 7]

Parallel Lines

First, review what you know about parallel lines.

- always the same distance apart
- never meet or intersect
- indicated with same arrows on the lines

Next, look at the diagram and find the pair of parallel lines

Lines \overline{AB} and \overline{CD} display an arrow.

Then, name the parallel lines using the correct symbol.

$$\overline{AB} \parallel \overline{CD}$$

Intersecting Lines

First, review what you know about intersecting lines.

- intersect at one point only
- can intersect at any angle
- no indication marks

Next, look at the diagram and find the pair of intersecting lines.

$$\overline{AD} \text{ and } \overline{BC}$$

Then, name the intersecting lines using the correct symbol.

\overline{AD} intersects \overline{BC} . There is no symbol to represent intersecting lines

Perpendicular Lines

First, review what you know about perpendicular lines.

- intersect or meet at one point only
- will meet or intersect at a 90° angle
- right angle is shown with a square

Next, look at the diagram and find the pair of intersecting lines.

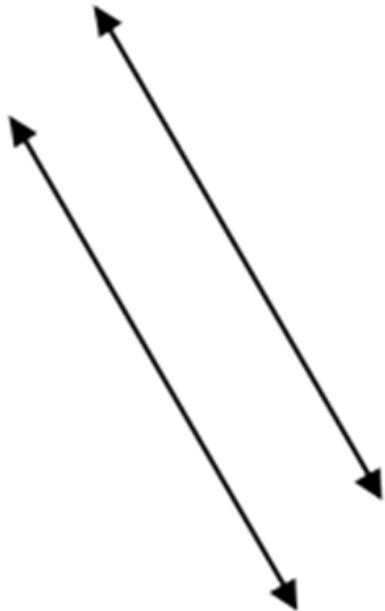
\overline{AE} and \overline{CD}

Then, name the intersecting lines using the correct symbol.

$\overline{AE} \perp \overline{CD}$.

Review

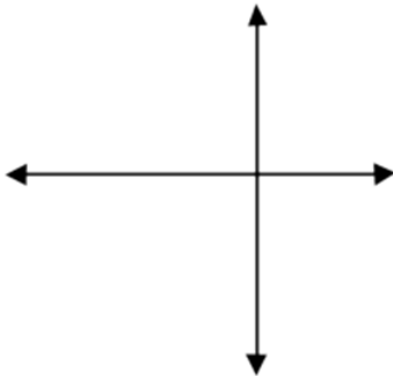
Name each type of lines shown below.



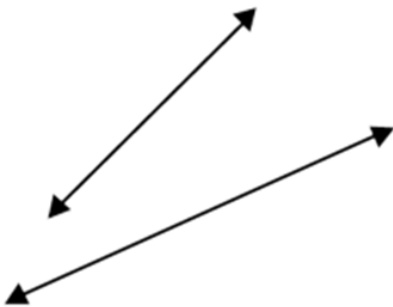
1. [Figure 8]



2. [Figure 9]



3. [Figure 10]



4. [Figure 11]

Write the definitions for the following types of lines.

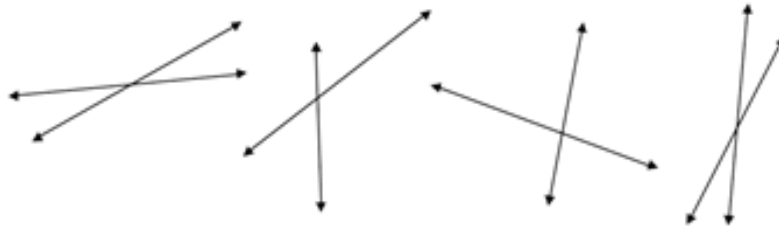
5. Parallel lines
6. Intersecting lines
7. Perpendicular lines

Answer the following questions about different types of lines.

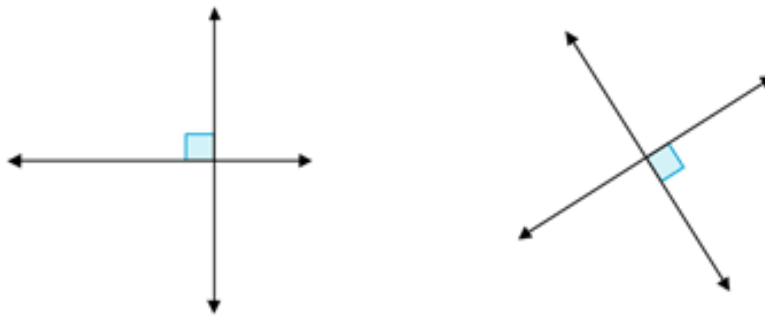
8. What is the symbol for parallel lines?

9. What is the symbol for perpendicular lines?
10. An intersection on a highway is an example of what type of lines?
11. A four way stop at a $\{90\}^{\circ}$ is an example of what type of lines?
12. Is it possible for intersecting lines to also be considered perpendicular?

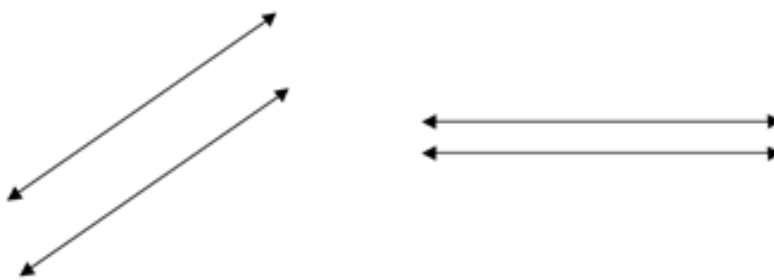
Describe the types of lines shown in each illustration.



13. [Figure 12]



14. [Figure 13]



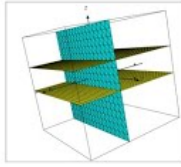
15. [Figure 14]

Review (Answers)

To see the review answers, return to the [Table of Contents](#) and select 'Other Versions' or 'Resources'.

Resources

Parallel and Perpendicular Lines and Planes



<https://flexbooks.ck12.org/flx/render/embeddedobject/168781>



Report Content Errors

1.0 REFERENCES















Image	Attributions
	<p>Credit: Alosh Bennett Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYwJw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLA1w-e7DUGM-mrPBV-mfjNhT-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aojCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urk1g-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLN Xi-ebYE3N-vkXIPW-ai77uT-57f66R-5EgZWt-7hxT1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SMDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP</p>

Image	Attributions
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYw-jw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLa1w-e7DUGM-mrPBBv-mfjNht-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aoJCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urklg-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLNXi-ebYE3N-vKXiPW-ai77uT-57f66R-5EgZWt-7hxt1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SmDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP ; https://www.flickr.com/photos/sharif/2423144088/in/photolist-4G8fjm-p1Njc2-6UvkSj-mrPBBv-c13aK5-5kxn9W-6UriNk-6Uvo4Q-6Urklg-5EgZWt-i5YCs2-8a48eR-8prEfK-ba4can-9DDtiR-9kzCzv-dgLNxi-4SmDRt-ebYE3N-kvST1W-9mrPd1-ag7D4W-ai77uT-gqDsgy-e77s5P-4Nyg6C-m8W2iW-2LD2Ey-andzsF-6UrhjM-56QXU4-4viQio-nFUqga-bqW9yE-sJNpH-5EgZST-9hfgzy-535j5n-dpDHUX-5HXSTX-9kC55q-p7vHAe-9gfDkq-rBbwpA-5hK5in-9geo5K-7RrUo8-9TXEFL-qpjbg-caeYP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYw-jw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLa1w-e7DUGM-mrPBBv-mfjNht-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aoJCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urklg-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLNXi-ebYE3N-vKXiPW-ai77uT-57f66R-5EgZWt-7hxt1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SmDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP ; https://www.flickr.com/photos/sharif/2423144088/in/photolist-4G8fjm-p1Njc2-6UvkSj-mrPBBv-c13aK5-5kxn9W-6UriNk-6Uvo4Q-6Urklg-5EgZWt-i5YCs2-8a48eR-8prEfK-ba4can-9DDtiR-9kzCzv-dgLNxi-4SmDRt-ebYE3N-kvST1W-9mrPd1-ag7D4W-ai77uT-gqDsgy-e77s5P-4Nyg6C-m8W2iW-2LD2Ey-andzsF-6UrhjM-56QXU4-4viQio-nFUqga-bqW9yE-sJNpH-5EgZST-9hfgzy-535j5n-dpDHUX-5HXSTX-9kC55q-p7vHAe-9gfDkq-rBbwpA-5hK5in-9geo5K-7RrUo8-9TXEFL-qpjbg-caeYP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYw-jw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLa1w-e7DUGM-mrPBBv-mfjNht-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aoJCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urklg-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLNXi-ebYE3N-vKXiPW-ai77uT-57f66R-5EgZWt-7hxt1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SmDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP ; https://www.flickr.com/photos/sharif/2423144088/in/photolist-4G8fjm-p1Njc2-6UvkSj-mrPBBv-c13aK5-5kxn9W-6UriNk-6Uvo4Q-6Urklg-5EgZWt-i5YCs2-8a48eR-8prEfK-ba4can-9DDtiR-9kzCzv-dgLNxi-4SmDRt-ebYE3N-kvST1W-9mrPd1-ag7D4W-ai77uT-gqDsgy-e77s5P-4Nyg6C-m8W2iW-2LD2Ey-andzsF-6UrhjM-56QXU4-4viQio-nFUqga-bqW9yE-sJNpH-5EgZST-9hfgzy-535j5n-dpDHUX-5HXSTX-9kC55q-p7vHAe-9gfDkq-rBbwpA-5hK5in-9geo5K-7RrUo8-9TXEFL-qpjbg-caeYP</p>
	<p>Credit: Alosh Bennett;Beshef Source: https://www.flickr.com/photos/aloshbennett/3209564747/in/photolist-5TBRMe-4LYw-jw-s8ZX5E-qnnwGE-7PH1jG-5FcqiQ-oygTgA-4G8fjm-pkKPd8-nTLa1w-e7DUGM-mrPBBv-mfjNht-oLFcnN-qqC3k6-p1Njc2-6UvkSj-c13aK5-7WhM1N-5kxn9W-aoJCxZ-6UriNk-6Uvo4Q-8qx3b9-6Urklg-i5YCs2-8a48eR-nFUqga-fusUg-bqW9yE-ba4can-dgLNXi-ebYE3N-vKXiPW-ai77uT-57f66R-5EgZWt-7hxt1e-4viQio-3oM3mr-9DDtiR-9SjTQ3-4SmDRt-kvST1W-9mrPd1-jY6tv5-ag7D4W-obB3ic-sJNpH-9Sh1wP ; https://www.flickr.com/photos/sharif/2423144088/in/photolist-4G8fjm-p1Njc2-6UvkSj-mrPBBv-c13aK5-5kxn9W-6UriNk-6Uvo4Q-6Urklg-5EgZWt-i5YCs2-8a48eR-8prEfK-ba4can-9DDtiR-9kzCzv-dgLNxi-4SmDRt-ebYE3N-kvST1W-9mrPd1-ag7D4W-ai77uT-gqDsgy-e77s5P-4Nyg6C-m8W2iW-2LD2Ey-andzsF-6UrhjM-56QXU4-4viQio-nFUqga-bqW9yE-sJNpH-5EgZST-9hfgzy-535j5n-dpDHUX-5HXSTX-9kC55q-p7vHAe-9gfDkq-rBbwpA-5hK5in-9geo5K-7RrUo8-9TXEFL-qpjbg-caeYP</p>