

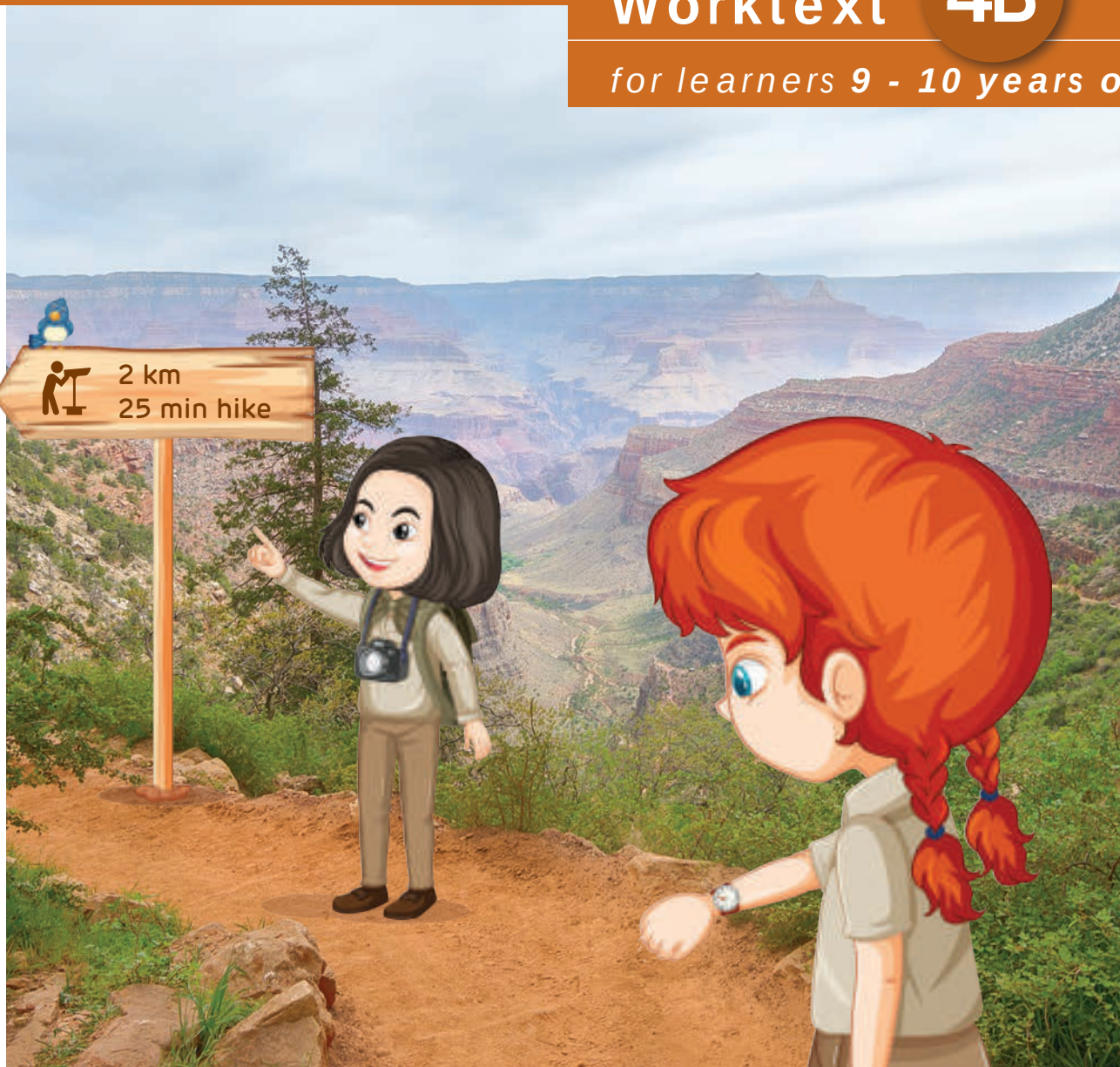
Let's Do

MATHEMATICS

Worktext

4B

for learners 9 - 10 years old



Let's Do Mathematics

Let's Do Mathematics is a series covering levels K-6 and is fully aligned to the United States Common Core State Standards (USCCSS). Each level consists of two books (Book A and Book B) and combines textbook-style presentation of concepts as well as workbook practice.

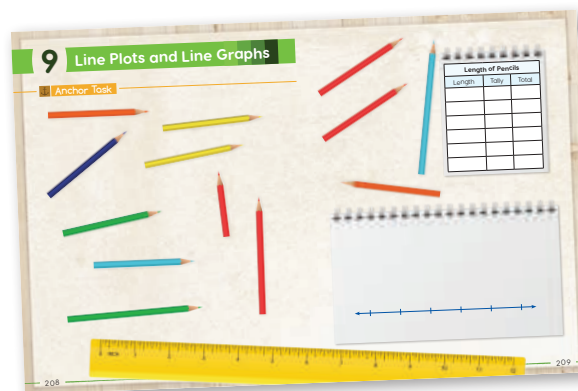
Central to the USCCSS is the promotion of problem-solving skills and reasoning. Let's Do Mathematics achieves this by teaching and presenting concepts through a problem-solving based pedagogy and using the concrete-pictorial-abstract (CPA) approach. Learners acquire knowledge and understanding of concepts through a guided progression beginning with concrete examples and experiences which then flow into pictorial representations and finally mastery at the abstract and symbolic level. This approach ensures that learners develop a fundamental understanding of concepts rather than answering questions by learned procedures and algorithms.

Key features of the series include:



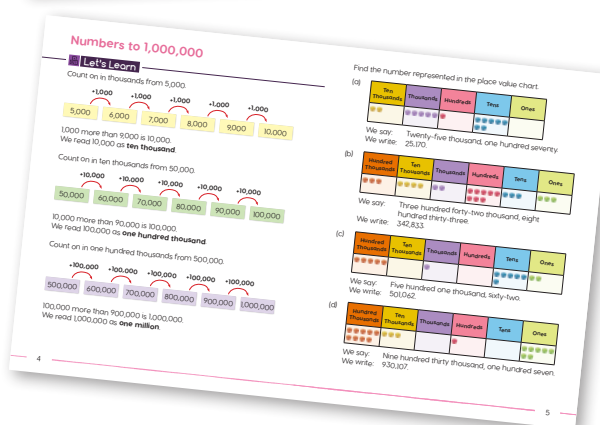
Anchor Task

Open-ended activities serve as the starting point for understanding new concepts. Learners engage in activities and discussions to form concrete experiences before the concept is formalized.



Let's Learn

Concepts are presented in a clear and colorful manner. Worked problems provide learners with guided step-by-step progression through examples. Series mascots provide guidance through helpful comments and observations when new concepts are introduced.



Let's Practice

Learners demonstrate their understanding of concepts through a range of exercises and problems to be completed in a classroom environment. Questions provide a varying degree of guidance and scaffolding as learners progress to mastery of the concepts.

Let's Practice

1. Write the times in 24-hour time.

(a) Morning Morning
 (b) Morning Morning
 (c) Afternoon Afternoon
 (d) Morning Morning
 (e) Night Night
 (f) Morning Morning

2. Write the times in 12-hour time using am and pm.

(a) (b)
 (c) (d)
 (e) (f)

3. Complete the table.

City	Departure (12-hour)	Departure (24-hour time)
Los Angeles	1:45 a.m.	
Miami		07:35
Dallas	3:40 p.m.	
Washington		20:20

At Home

Further practice designed to be completed without the guidance of a teacher. Exercises and problems in this section follow on from those completed under Let's Practice.

At Home

1. Write the equivalent fractions.

(a) = =
 (b) = =
 (c) = =
 (d) = =

2. Use multiplication to find equivalent fractions.

(a) $\frac{4}{7} = \frac{4 \times 2}{7 \times 2} = \frac{8}{14}$
 (b) $\frac{2}{9} = \frac{2 \times 2}{9 \times 2} = \frac{4}{18}$
 (c) $\frac{2}{9} = \frac{2 \times 3}{9 \times 3} = \frac{6}{27}$
 (d) $\frac{2}{9} = \frac{2 \times 4}{9 \times 4} = \frac{8}{36}$
 (e) $\frac{2}{9} = \frac{2 \times 5}{9 \times 5} = \frac{10}{45}$
 (f) $\frac{2}{9} = \frac{2 \times 6}{9 \times 6} = \frac{12}{54}$

3. Use division to find equivalent fractions.

(a) $\frac{12}{20} = \frac{12 \div 4}{20 \div 4} = \frac{3}{5}$
 (b) $\frac{12}{20} = \frac{12 \div 6}{20 \div 6} = \frac{2}{3}$
 (c) $\frac{12}{20} = \frac{12 \div 3}{20 \div 3} = \frac{4}{6}$
 (d) $\frac{12}{20} = \frac{12 \div 2}{20 \div 2} = \frac{6}{10}$
 (e) $\frac{12}{20} = \frac{12 \div 1}{20 \div 1} = \frac{12}{20}$
 (f) $\frac{12}{20} = \frac{12 \div 1}{20 \div 1} = \frac{12}{20}$

Hands On

Learners are encouraged to 'learn by doing' through the use of group activities and the use of mathematical manipulatives.

Hands On

Take turns in rolling a dice. Move the number shown on the dice. Convert the metric measurement to the unit shown in brackets.

Some rules:
 If you answer incorrectly, go back to the start.
 If you land on a honey pot, skip forward 3 spaces.
 If you land on a bee, fly back 3 spaces.
 The first player to the bee hive is the winner!

Roll the dice and move the bee. Convert the metric measurement to the unit shown in brackets.

1. 10 cm (m)
 2. 100 m (km)
 3. 1000 m (km)
 4. 1000 g (kg)
 5. 1000 L (mL)
 6. 1000 mL (L)
 7. 1000 L (mL)
 8. 1000 mL (L)
 9. 1000 L (mL)
 10. 1000 mL (L)

Solve It!

Activities that require learners to apply logical reasoning and problem-solving. Problems are often posed which do not have a routine strategy for solving them. Learners are encouraged to think creatively and apply a range of problem-solving heuristics.

Solve It!

What is Sophie's favourite fruit? Match the mixed numbers and improper fractions to find out.

1. 2.
 3. 4.
 5. 6.
 7. 8.
 9. 10.
 11. 12.
 13. 14.
 15. 16.
 17. 18.
 19. 20.
 21. 22.
 23. 24.
 25. 26.
 27. 28.
 29. 30.
 31. 32.
 33. 34.
 35. 36.
 37. 38.
 39. 40.
 41. 42.
 43. 44.
 45. 46.
 47. 48.
 49. 50.
 51. 52.
 53. 54.
 55. 56.
 57. 58.
 59. 60.
 61. 62.
 63. 64.
 65. 66.
 67. 68.
 69. 70.
 71. 72.
 73. 74.
 75. 76.
 77. 78.
 79. 80.
 81. 82.
 83. 84.
 85. 86.
 87. 88.
 89. 90.
 91. 92.
 93. 94.
 95. 96.
 97. 98.
 99. 100.

Looking Back

Consolidated practice where learners demonstrate their understanding on a range of concepts taught within a unit.

Looking Back

1. Find the first 2 equivalent fractions.

(a) $\frac{1}{7} = \frac{2}{14} = \frac{3}{21}$ (b) $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$
 (c) $\frac{1}{8} = \frac{2}{16} = \frac{3}{24}$ (d) $\frac{2}{5} = \frac{4}{10} = \frac{6}{15}$
 (e) $\frac{3}{7} = \frac{6}{14} = \frac{9}{21}$ (f) $\frac{2}{9} = \frac{4}{18} = \frac{6}{27}$

2. Find the equivalent fraction in its simplest form.

(a) $\frac{2}{4} = \frac{1}{2}$ (b) $\frac{9}{15} = \frac{3}{5}$
 (c) $\frac{5}{20} = \frac{1}{4}$ (d) $\frac{12}{16} = \frac{3}{4}$
 (e) $\frac{18}{36} = \frac{1}{2}$ (f) $\frac{35}{45} = \frac{7}{9}$

3. Tell whether the fractions are equivalent by writing + or -.

(a) $\frac{1}{3} \frac{6}{9}$ (b) $\frac{12}{14} \frac{2}{7}$
 (c) $\frac{3}{4} \frac{9}{8}$ (d) $\frac{11}{33} \frac{1}{3}$

4. Write the improper fraction represented by the colored parts of the shapes.

(a) (b)
 (c) (d)

5. Write the mixed number represented by the colored parts of the shapes in its simplest form.

(a) (b)
 (c) (d)

6. Draw a point to show the fraction on the number line.

(a) $\frac{2}{3}$ (b) $\frac{5}{7}$

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5 Time

Converting Units of Time



Anchor Task

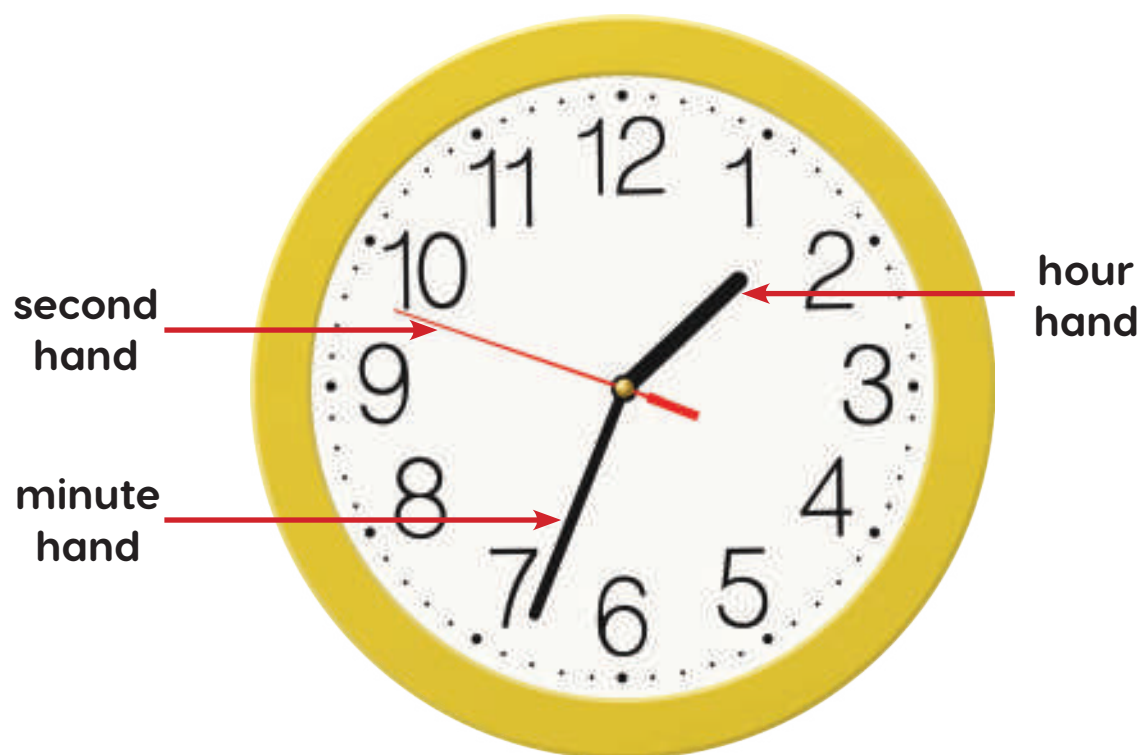


Activity	Time (s)	Time (min and s)



Let's Learn

The analog clock below has an hour hand, minute hand and second hand.



The **hour hand** moves the slowest. It takes the hour hand one hour to move from one number to the next. It takes the hour hand 12 hours to move once around the clock. There are 24 hours in one day. So, the hour hand moves around the clock 2 times in one day.

The **minute hand** moves faster than the hour hand. It takes the minute hand 5 minutes to move from one number to the next. It takes the minute hand 60 minutes, or one hour, to move once around the clock. There are 60 minutes in one hour.

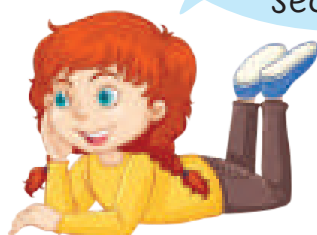
The **second hand** moves the fastest. It takes the second hand 5 seconds to move from one number to the next. It takes the second hand 60 seconds, or one minute, to move once around the clock. There are 60 seconds in one minute.

We know that in 1 minute there are 60 seconds.
How many seconds are there in 2 minutes?

$$\begin{aligned} 2 \text{ min} &= 2 \times 60 \text{ s} \\ &= 120 \text{ s} \end{aligned}$$

There are 120 s in 2 min.

1 min = 60 s
2 min = 120 s
3 min = 180 s
4 min = 240 s
5 min = 300 s

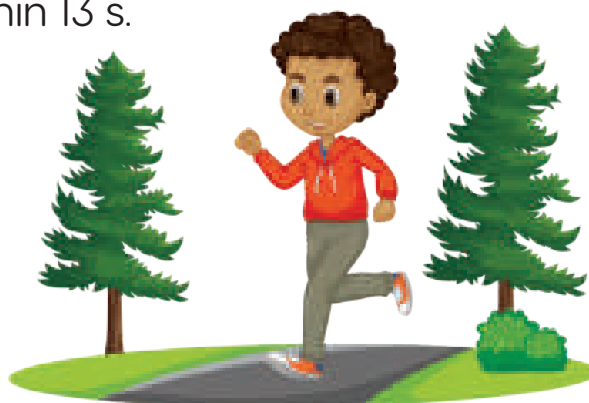


Use this chart
to convert between
minutes and
seconds.

Blake finished a running race in 3 min 13 s.
Express the time in seconds.

$$3 \text{ min } 13 \text{ s} \begin{cases} 3 \text{ min} = 180 \text{ s} \\ 13 \text{ s} \end{cases}$$

$$\begin{aligned} 3 \text{ min } 13 \text{ s} &= 180 \text{ s} + 13 \text{ s} \\ &= 193 \text{ s} \end{aligned}$$



Blake finished the running race in 193 seconds.

Express 255 seconds in minutes and seconds.

$$\begin{aligned} 255 \text{ s} &= 240 \text{ s} + 15 \text{ s} \\ &= 4 \text{ min } 15 \text{ s} \end{aligned}$$



We know that in 1 hour there are 60 minutes.
How many minutes are there in 4 hours?

$$\begin{aligned} 4 \text{ h} &= 4 \times 60 \text{ min} \\ &= 240 \text{ min} \end{aligned}$$

There are 240 min in 4 hours.

1 h = 60 min
2 h = 120 min
3 h = 180 min
4 h = 240 min
5 h = 300 min



*Use this chart
to convert between
hours and minutes.*

Sophie went on a hike for 4 h 35 min.
Express the time Sophie hiked in minutes.

$$4 \text{ h } 35 \text{ min} \begin{cases} 4 \text{ h} = 240 \text{ min} \\ 35 \text{ min} \end{cases}$$

$$\begin{aligned} 4 \text{ h } 35 \text{ min} &= 240 \text{ min} + 35 \text{ min} \\ &= 275 \text{ min} \end{aligned}$$

Sophie hiked for 275 min.



Express 282 minutes in hours and minutes.

$$\begin{aligned} 282 \text{ min} &= 240 \text{ min} + 42 \text{ min} \\ &= 4 \text{ h } 42 \text{ s} \end{aligned}$$



Let's Practice

1. Convert the times to seconds.
- (a) Riley talked on the phone for 2 minutes 21 seconds.
How long did Riley talk on the phone in seconds?

$$2 \text{ min } 21 \text{ s} \begin{cases} \text{ } \end{cases} \begin{matrix} \text{ } \end{matrix} \begin{matrix} \text{ } \end{matrix} \text{ min} = \text{ } \text{ s} \\ \text{ } \end{matrix} \begin{matrix} \text{ } \end{matrix} \text{ s}$$

$$2 \text{ min } 21 \text{ s} = \text{ } \text{ s} + \text{ } \text{ s} \\ = \text{ } \text{ s}$$



Riley talked on the phone for _____ seconds.

- (b) Wyatt heated his dinner for 3 minutes 47 seconds.
How long did Wyatt heat his dinner for in seconds?

$$3 \text{ min } 47 \text{ s} \begin{cases} \text{ } \end{matrix} \begin{matrix} \text{ } \end{matrix} \begin{matrix} \text{ } \end{matrix} \text{ min} = \text{ } \text{ s} \\ \text{ } \end{matrix} \begin{matrix} \text{ } \end{matrix} \text{ s}$$

$$3 \text{ min } 47 \text{ s} = \text{ } \text{ s} + \text{ } \text{ s} \\ = \text{ } \text{ s}$$



Wyatt heated his dinner for _____ seconds.

7 Angles



Anchor Task

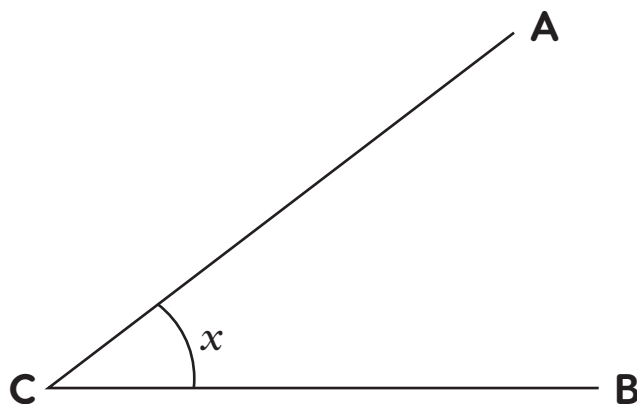


Identifying and Naming Angles



Let's Learn

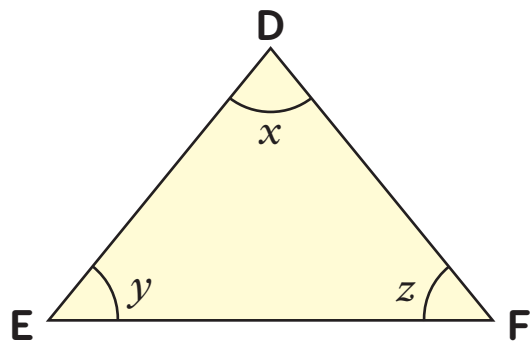
An angle is formed by two rays with a common endpoint.
The common endpoint where the rays meet is called a **vertex**.



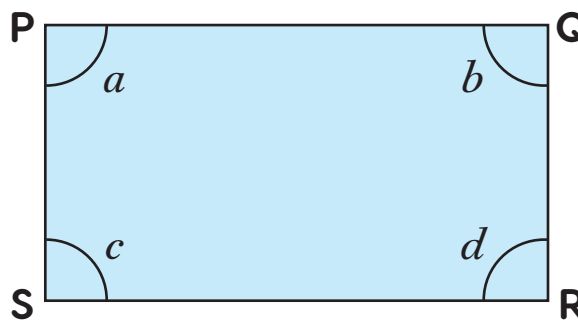
We use the symbol $\angle$ to name angles.

Rays AC and BC meet at vertex C to form an angle.
We can name the angle $\angle ACB$ or $\angle BCA$.
We can also name the angle $\angle x$.

Angles are also formed within shapes.
A triangle has 3 sides and 3 angles.
A rectangle has 4 sides and 4 angles.



$$\begin{aligned}\angle x &= \angle EDF = \angle FDE \\ \angle y &= \angle DEF = \angle FED \\ \angle z &= \angle EFD = \angle DFE\end{aligned}$$

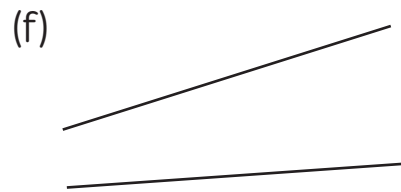
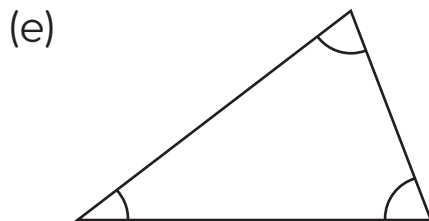
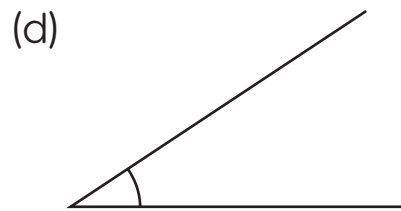
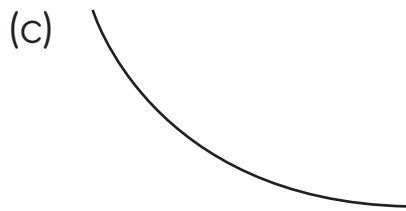
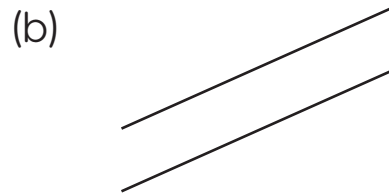
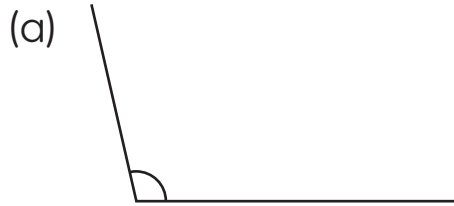


$$\begin{aligned}\angle a &= \angle SPQ = \angle QPS \\ \angle b &= \angle PQR = \angle RQP \\ \angle c &= \angle PSR = \angle RSP \\ \angle d &= \angle SRQ = \angle QRS\end{aligned}$$



Let's Practice

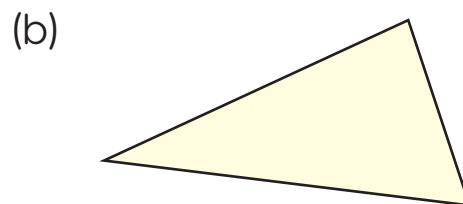
1. Circle the diagrams that show angles.



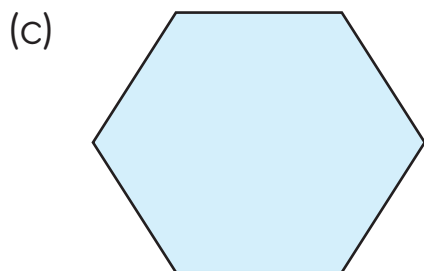
2. Circle the angles in each shape. Fill in the blanks.



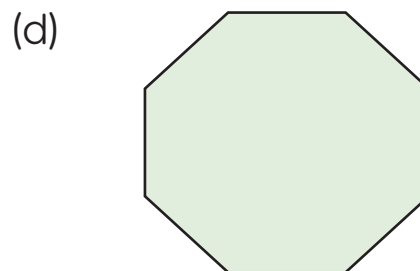
_____ sides _____ angles



_____ sides _____ angles



_____ sides _____ angles

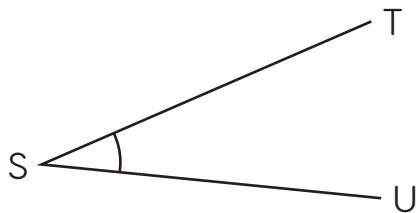


_____ sides _____ angles



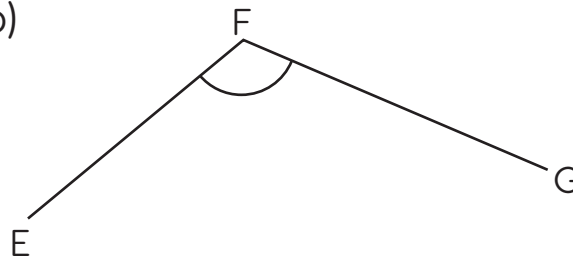
3. Name the angles.

(a)



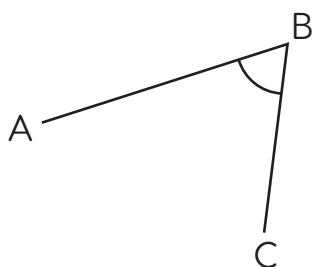
$\angle$ _____

(b)



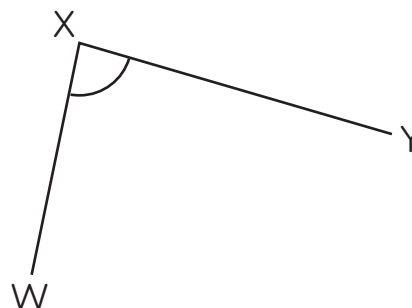
$\angle$ _____

(c)



$\angle$ _____

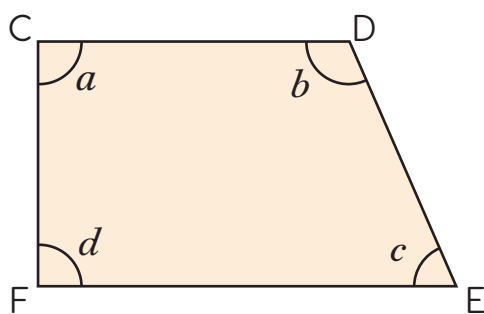
(d)



$\angle$ _____

4. Name the angles in other ways.

(a)



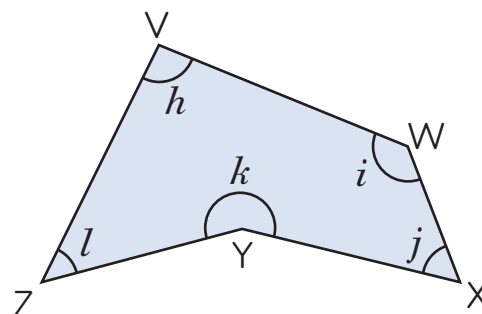
$\angle a = \angle$ _____

$\angle$ _____ $= \angle CFE$

$\angle c = \angle$ _____

$\angle$ _____ $= \angle CDE$

(b)



$\angle i = \angle$ _____

$\angle$ _____ $= \angle VZY$

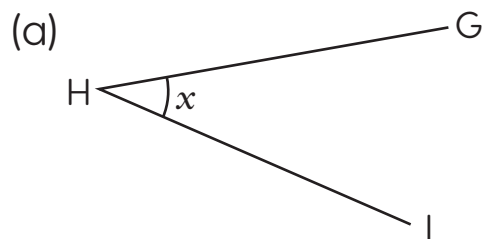
$\angle k = \angle$ _____

$\angle$ _____ $= \angle WXY$

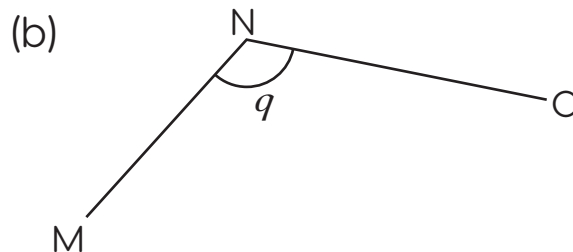


At Home

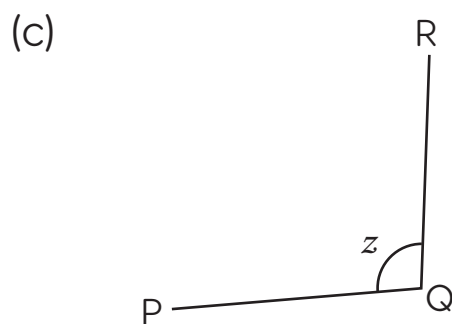
1. Name the angles.



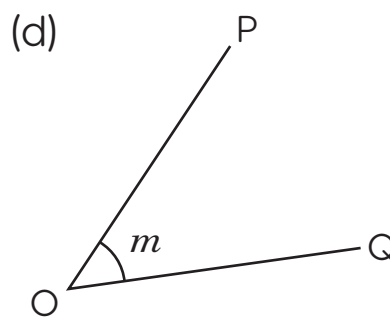
$$\angle x = \angle \underline{\hspace{2cm}}$$



$$\angle q = \angle \underline{\hspace{2cm}}$$

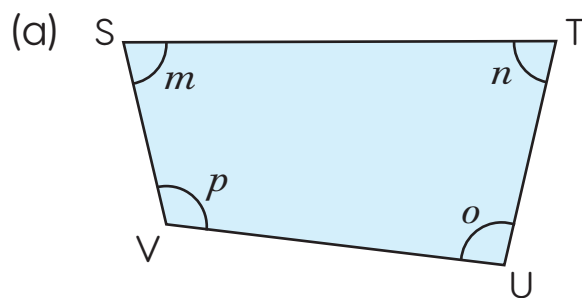


$$\angle z = \angle \underline{\hspace{2cm}}$$



$$\angle m = \angle \underline{\hspace{2cm}}$$

2. Name the angles.

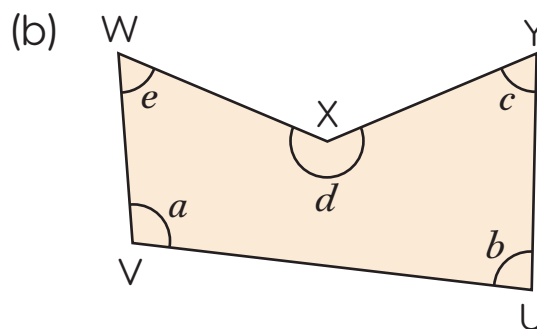


$$\angle p = \angle \underline{\hspace{2cm}}$$

$$\angle \underline{\hspace{2cm}} = \angle VUT$$

$$\angle m = \angle \underline{\hspace{2cm}}$$

$$\angle \underline{\hspace{2cm}} = \angle UTS$$



$$\angle a = \angle \underline{\hspace{2cm}}$$

$$\angle \underline{\hspace{2cm}} = \angle WXY$$

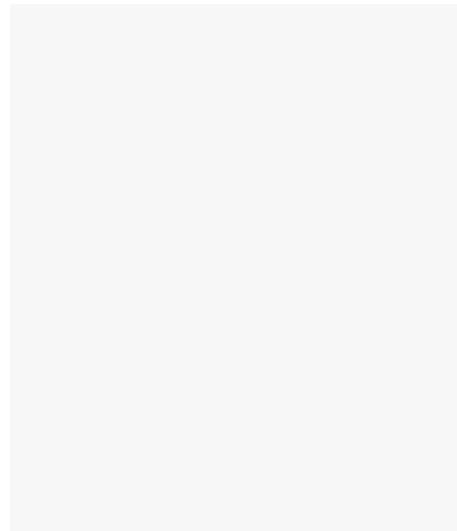
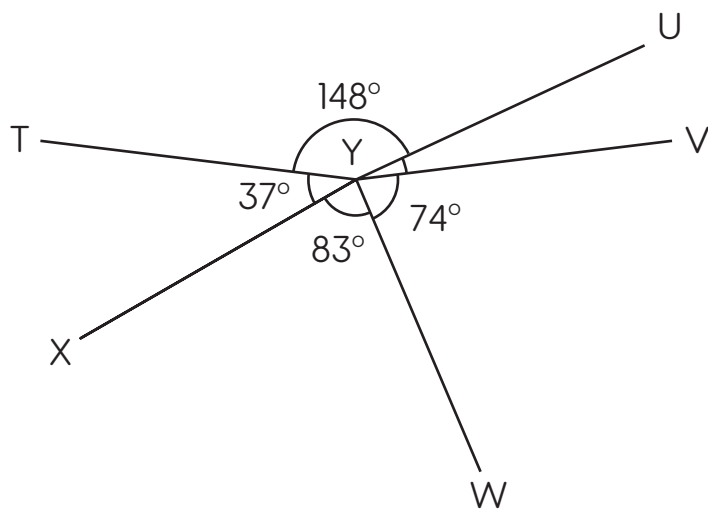
$$\angle e = \angle \underline{\hspace{2cm}}$$

$$\angle \underline{\hspace{2cm}} = \angle UYX$$



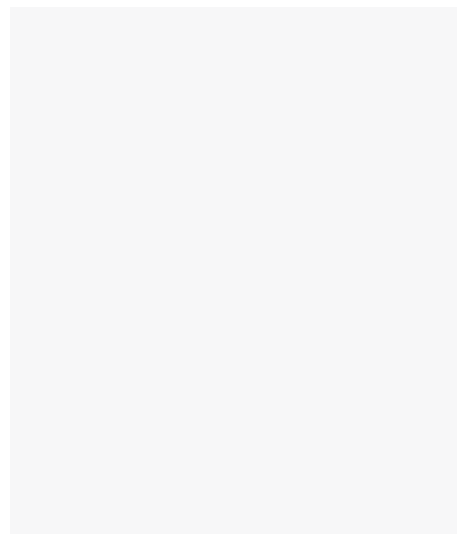
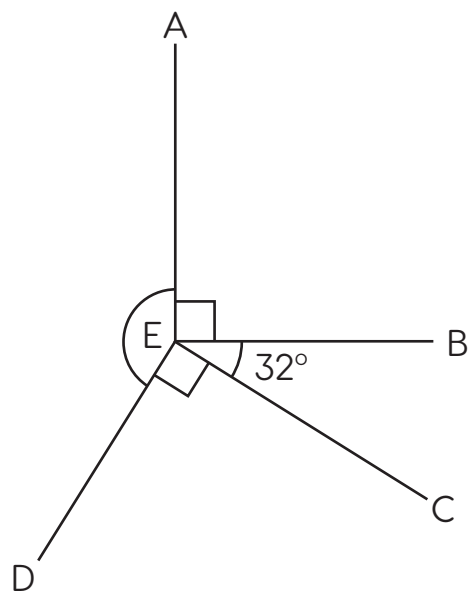
(d) All straight lines meet at point Y.

$\angle UYV =$ _____



(e) All straight lines meet at point E.

$\angle AED =$ _____



Word Problems



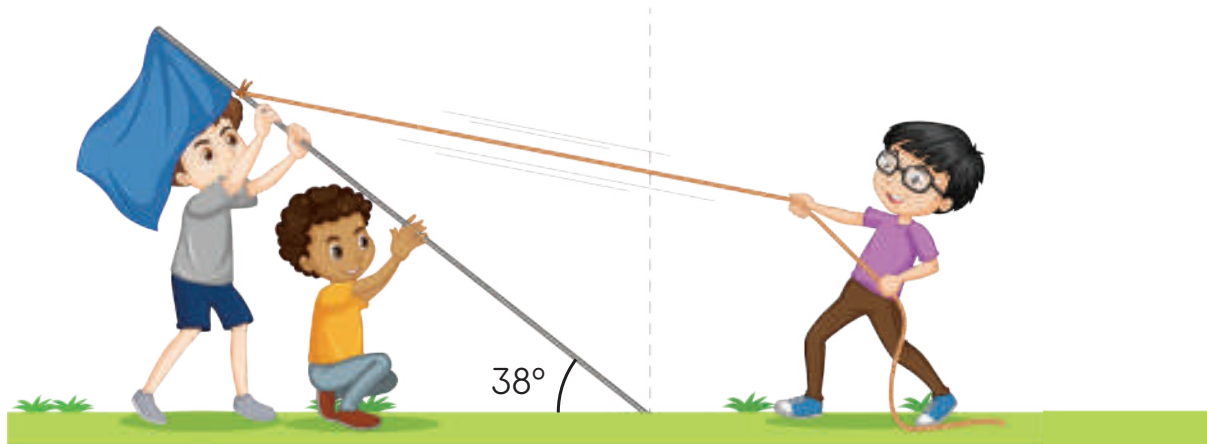
Let's Practice

1. Sophie tries to perform a 360° spin while ice skating. She manages to spin 327° . How much more does she need to turn to complete a full spin?

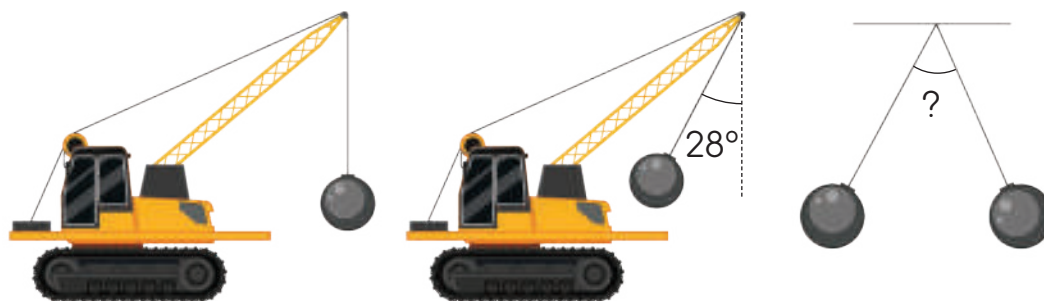


2. How many degrees does the minute hand of a clock turn in 15 minutes?

3. Ethan and his friends are erecting a flag pole. How much more do they have to turn the pole to make it upright?



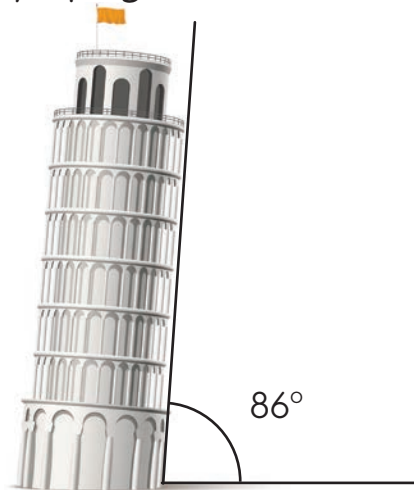
4. A wrecking ball is pulled back by an angle of 28° and released. It swings to an angle that is 5° less than the release angle. Find the total angle that the wrecking ball swings.





At Home

1. The Leaning Tower of Pisa forms an angle of 86° to the ground as shown below. How many degrees must it turn to become fully upright?



2. A Ferris wheel turns 42° in 1 minute. How much does it turn in 5 minutes?





3. Look at the time shown on the clock below to answer the questions.



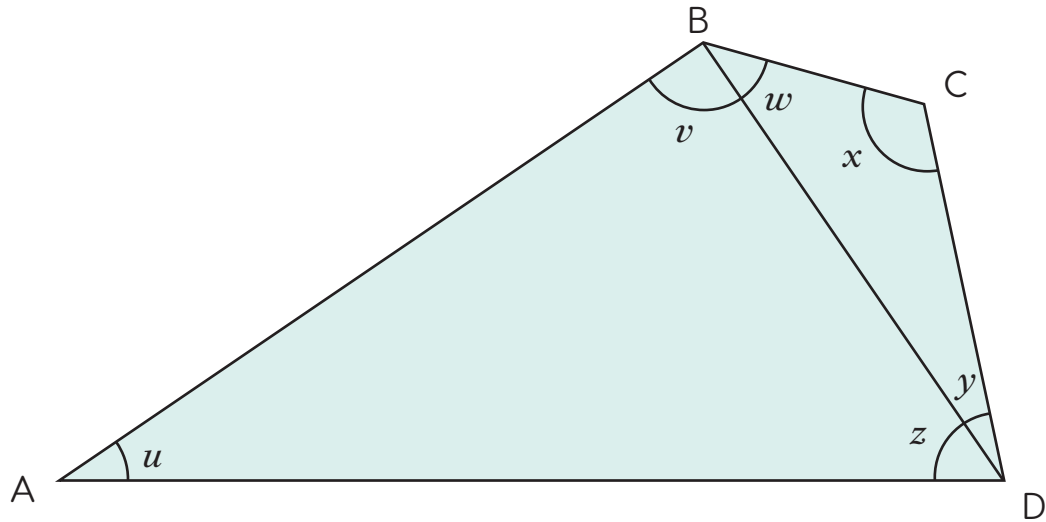
- (a) How many degrees has the minute hand turned since 1 o'clock?

- (b) The minute hand turns another 60° . What is the time now?



Looking Back

1. Name the angles.



$$\angle v = \angle \underline{\hspace{2cm}}$$

$$\angle \underline{\hspace{2cm}} = \angle BAD$$

$$\angle \underline{\hspace{2cm}} = \angle BCD$$

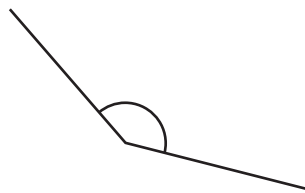
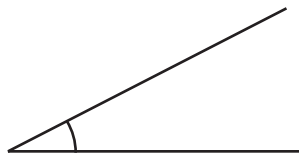
$$\angle y = \angle \underline{\hspace{2cm}}$$

$$\angle z = \angle \underline{\hspace{2cm}}$$

$$\angle w = \angle \underline{\hspace{2cm}}$$

2. Check the bigger angle.

(a)

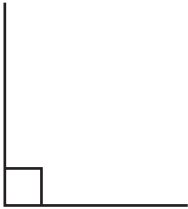
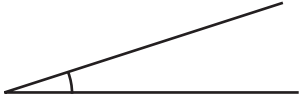
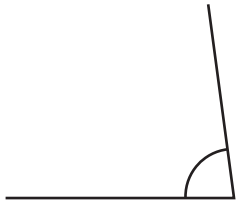
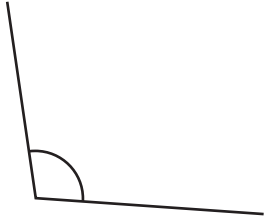
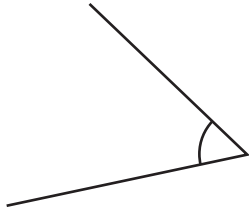
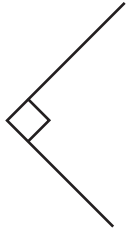


(b)





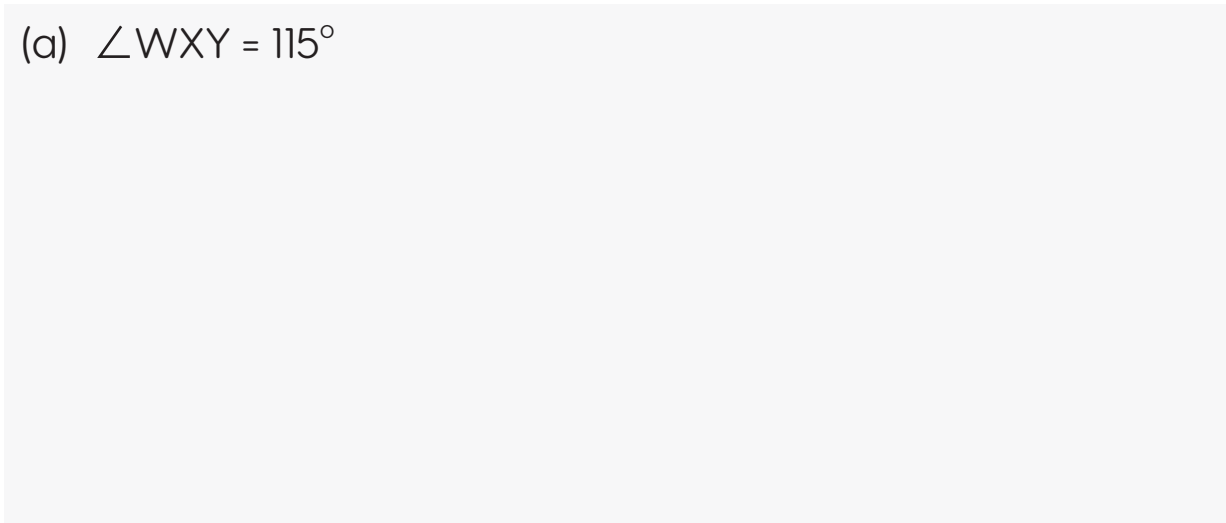
3. Check the box that applies to each angle. Use a piece of paper to help you.

Angle	Smaller than a right angle	Right angle	Bigger than a right angle
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

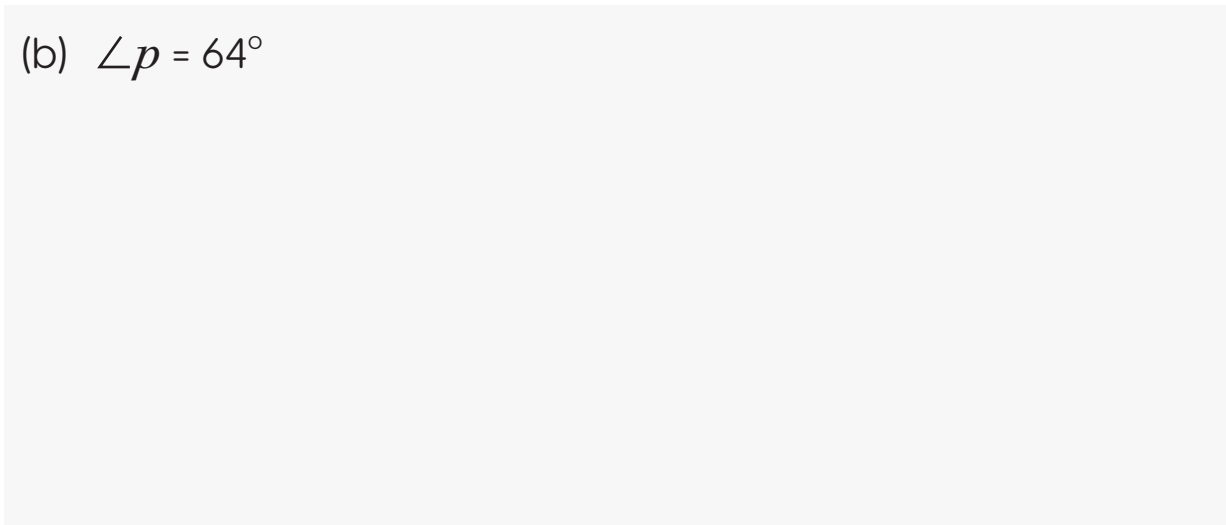


4. Draw and label the angles.

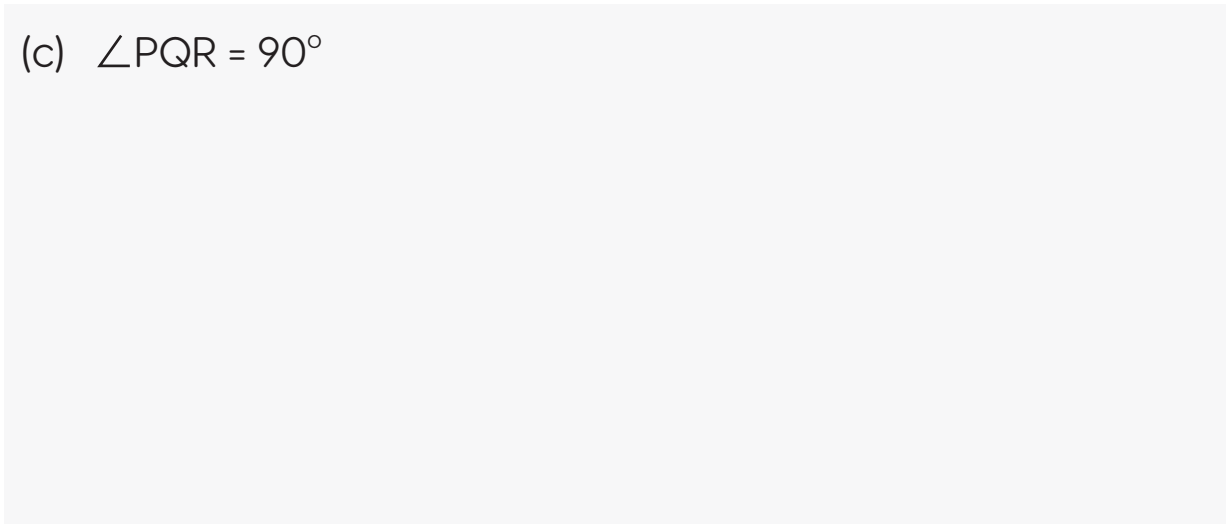
(a) $\angle WXY = 115^\circ$



(b) $\angle p = 64^\circ$



(c) $\angle PQR = 90^\circ$





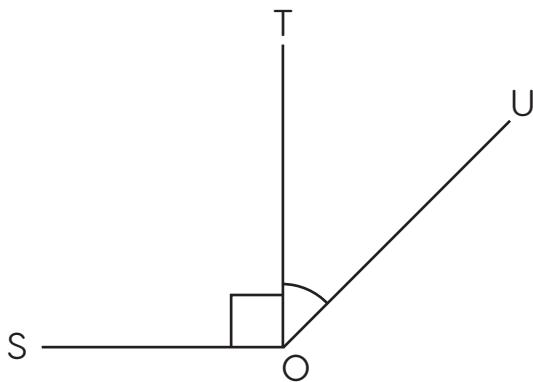
(d) $\angle t = 120^\circ$

(e) $\angle ABC = 160^\circ$

5. Find the unknown angle. Show your working.

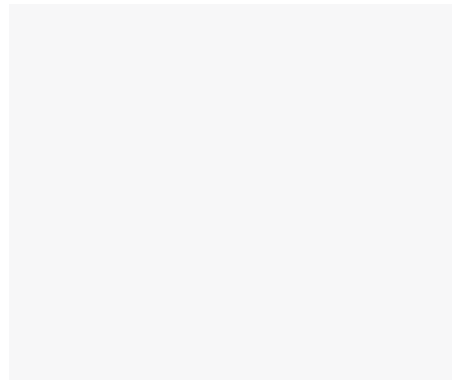
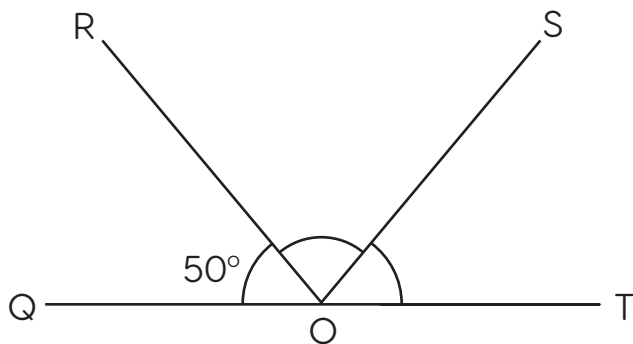
(a) $\angle SOU = 135^\circ$

$\angle TOU = \underline{\hspace{2cm}}$



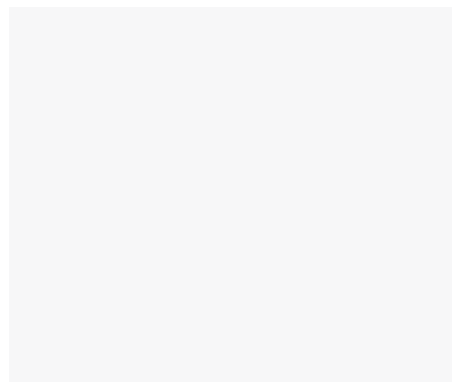
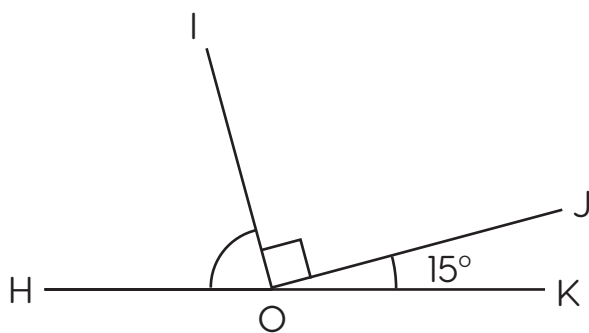


(b) QT is a straight line and $\angle ROQ = \angle SOT$. $\angle ROS =$ _____



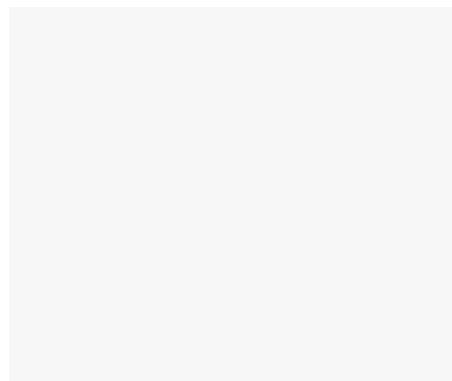
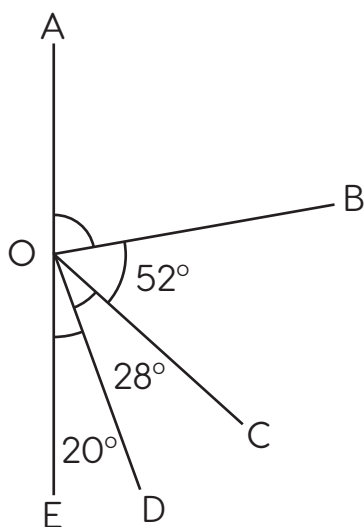
(c) HK is a straight line.

$\angle HOI =$ _____



(d) AE is a straight line.

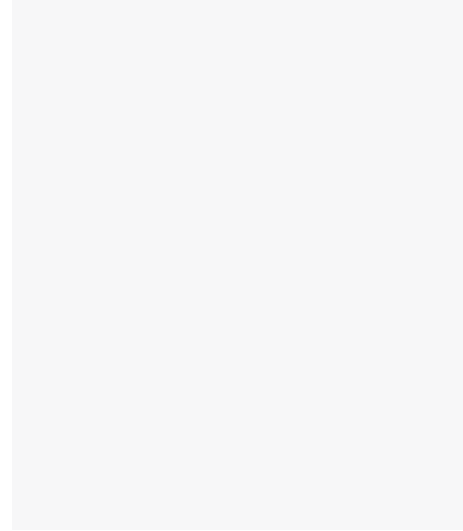
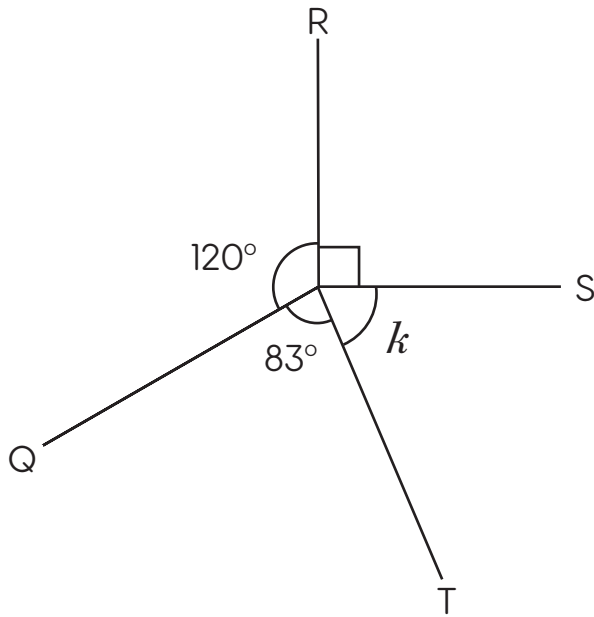
$\angle AOB =$ _____





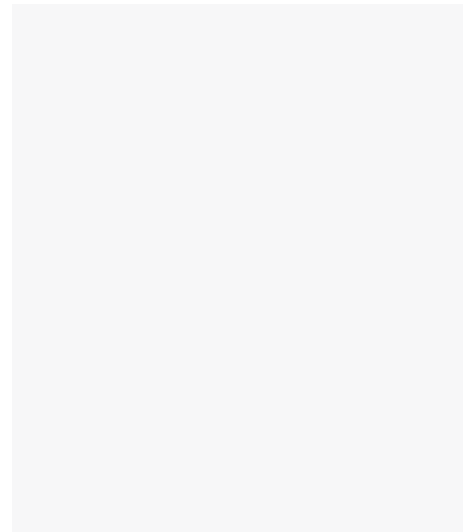
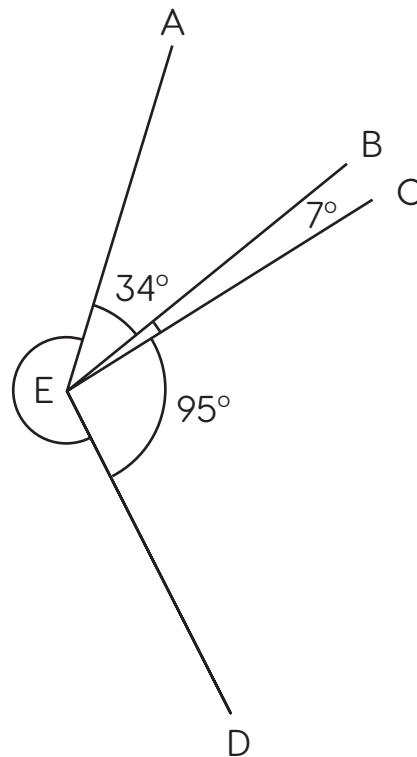
(e) All straight lines meet at a point.

$\angle k = \underline{\hspace{2cm}}$

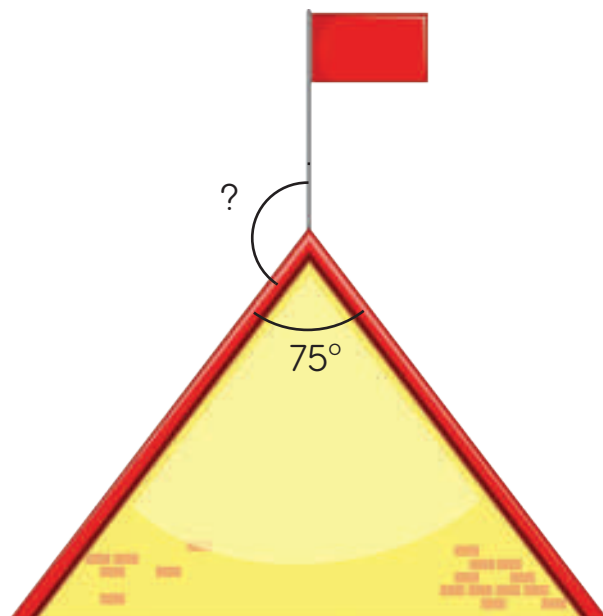


(f) All straight lines meet at point E.

$\angle AED = \underline{\hspace{2cm}}$



6. The roof of a school building is the shape of a triangle and has a flag on top. Find the angle formed between the flag pole and the roof.



7. When the minute hand on a clock is pointing at 10, how many degrees must it turn to point at 12?