

Practice Tangent Homework Practice

- 1.** Find $\tan A$ and $\tan C$ in each triangle. Round answers to the nearest thousandth, if necessary



- 2.** Find each of the following, to the nearest thousandth.

- a) $\tan 15^\circ$ b) $\tan 62^\circ$ c) $\tan 5^\circ$
d) $\tan 30^\circ$ e) $\tan 82^\circ$ f) $\tan 45^\circ$

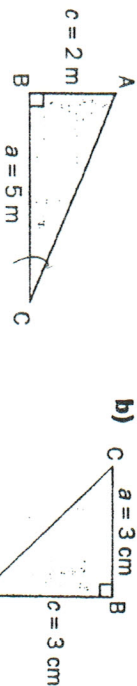
- 3.** Find $\angle B$, to the nearest degree.

- a) $\tan B = 0.600$ b) $\tan B = 0.833$ c) $\tan B = 3.025$

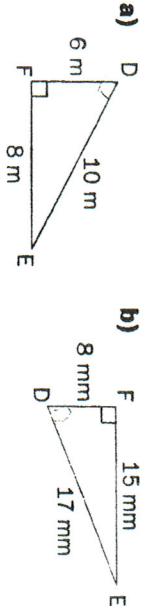
- 4.** Find $\angle W$, to the nearest degree.

- a) $\tan W = \frac{4}{5}$ b) $\tan W = \frac{6}{7}$ c) $\tan W = \frac{7}{4}$ d) $\tan W = \frac{15}{9}$

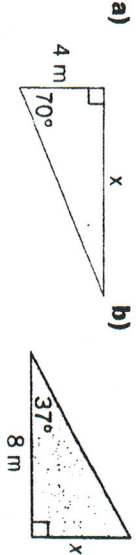
- 5.** Calculate $\tan C$ in each triangle.



- 6.** Calculate $\tan D$, $\angle D$, $\tan E$, and $\angle E$. Round each angle measure to the nearest degree.

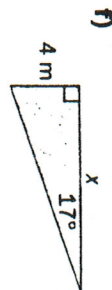
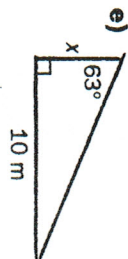


- 7.** Find the value of x , to the nearest tenth of a metre.

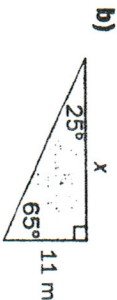
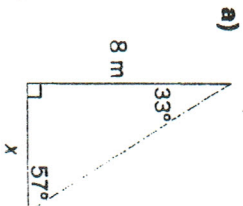


- c)

- d)



- 8.** Find the value of x , to the nearest tenth of a metre.

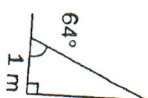


Applications and Problem Solving

- 9.** In a right triangle, the side adjacent to an angle of 23° is 12 cm long. How long is the side opposite the 23° angle, to the nearest tenth of a centimetre?

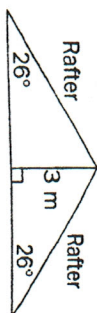
- 10.** In a right triangle, the side opposite the 53° angle is 4 cm long. How long is the side adjacent to the 53° angle, to the nearest centimetre?

- 11.** Ladder When a ladder is rested against a tree, the foot of the ladder is 1 m from the base of the tree and forms an angle of 64° with the ground. How far up the tree does the ladder reach, to the nearest tenth of a metre?



Initials _____

- 12. Tall tree** One of Canada's tallest trees is a Douglas fir on Vancouver Island. The angle of elevation measured by an observer who is 78 m from the base of the tree is 50° . How tall is this tree, to the nearest metre?



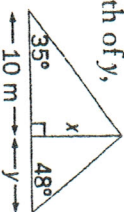
- 13. Roof rafters** The angle of inclination of the rafters of the roof of a house is 26° . The roof support is 3 m high. How wide is the house, to the nearest metre?

- 14. Schoolyard** Pietra walked diagonally across a rectangular schoolyard 45 m by 65 m. To the nearest degree, at what angle with respect to the longer side did she walk?

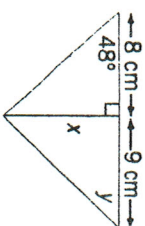
- 15. Stairs** Comfortable stairs have a slope of $\frac{3}{4}$. What angle do the stairs make with the horizontal, to the nearest degree?

- 16. Skylon Tower** From a point 50 m from the base of the Skylon Tower in Niagara Falls, the angle of elevation of the top of the tower is 78° . Find the height of the tower, to the nearest metre.

- 17. Measurement** Find the length of x , then the length of y , to the nearest tenth of a metre.



- 18. Measurement** Find the length of x , to the nearest tenth of a centimetre, then the measure of $\angle y$, to the nearest degree.

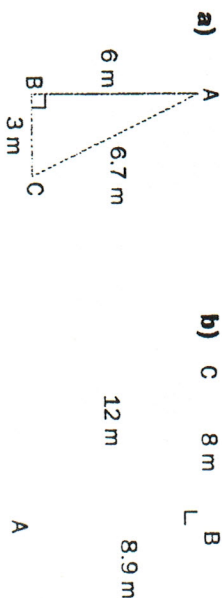


- Practice 1. a)** $\tan A = 0.333$, $\tan C = \frac{3}{4}$
b) $\tan A = 0.714$, $\tan C = 1.4$ **2. a)** 0.268 **b)** 1.881
c) 0.087 **d)** 0.577 **e)** 7.115 **f)** 1 **3. a)** 31° **b)** 40° **c)** 72°
4. a) 39° **b)** 41° **c)** 60° **d)** 59° **5. a)** 0.4 **b)** 1
6. a) $\tan D = \frac{4}{3}$, $\angle D = 53^\circ$, $\tan E = \frac{3}{4}$, $\angle E = 37^\circ$

- b)** $\tan D = \frac{15}{8}$, $\angle D = 62^\circ$, $\tan E = \frac{8}{15}$, $\angle E = 28^\circ$
7. a) 11.0 m **b)** 6.0 m **c)** 11.2 m **d)** 11.3 m **e)** 5.1 m
f) 13.1 m **8. a)** 5.2 m **b)** 23.6 m

- Applications and Problem Solving 9.** 5.1 cm **10.** 3 cm
11. 2.1 m **12.** 93 m **13.** 12 m **14.** 35° **15.** 37°
16. 235 m **17.** $x = 7.0$ m, $y = 6.3$ m **18.** $x = 8.9$ cm,
 $\angle y = 45^\circ$ **19. a)** 45° **b)** 45° **c)** 45° **20.** 118 m

- 1. Find $\sin A$ and $\sin C$ in each triangle. Round answers to the nearest thousandth, if necessary.**



- 2. Find each of the following, to the nearest thousandth.**
a) $\sin 45^\circ$ **b)** $\sin 60^\circ$ **c)** $\sin 37^\circ$
d) $\sin 25^\circ$ **e)** $\sin 0^\circ$ **f)** $\sin 89^\circ$

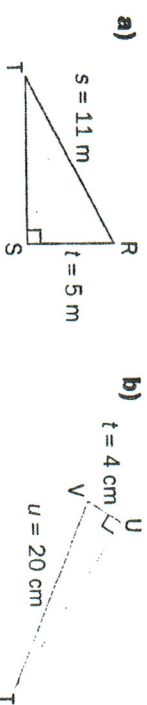
- 3. Find $\angle J$, to the nearest degree.**

- a)** $\sin J = 0.503$ **b)** $\sin J = 0.952$ **c)** $\sin J = 0.712$
d) $\sin J = 0.303$ **e)** $\sin J = 0.998$ **f)** $\sin J = 0.101$

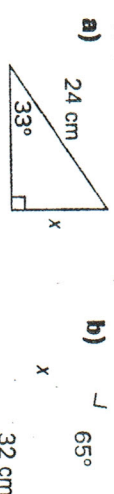
- 4. Find $\angle B$, to the nearest degree.**

- a)** $\sin B = \frac{2}{3}$ **b)** $\sin B = \frac{3}{4}$ **c)** $\sin B = \frac{1}{2}$
d) $\sin B = \frac{2}{5}$ **e)** $\sin B = \frac{1}{8}$ **f)** $\sin B = \frac{7}{9}$

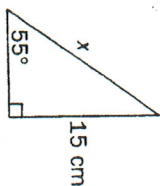
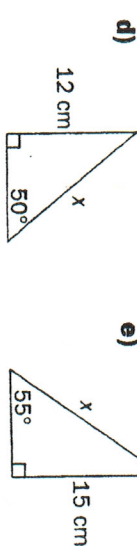
- 5. Calculate $\sin T$ in each triangle. Then, find $\angle T$, to the nearest degree.**



- 6. Find the value of x , to the nearest tenth of a centimetre.**



- a)** 24 cm **b)** 65° **c)** 55 cm



- Applications and Problem Solving**

- 7. In $\triangle PQR$, $\angle Q = 90^\circ$, and $PR = 20$ cm. Find PQ , to the nearest tenth of a centimetre, if $\angle R = 41^\circ$.**

8. In $\triangle DEF$, find $\angle F$, to the nearest degree, if $DE = 15$ cm, $DF = 18$ cm, and $\angle E = 90^\circ$.

9. In $\triangle ABC$, $\angle B = 90^\circ$. If $AB = 10$ cm and $\angle C = 38^\circ$, find the length of AC , to the nearest tenth of a centimetre.

10. **Parasailing** The towrope pulling a parasailor is 70 m long. A boat crew member estimates that the angle between the towrope and the water is about 30° . Find the height of the parasailor above the water, to the nearest 10 m.

11. **Garden hoe** A 1.5-m hoe rests against the side of a garden shed. The angle the handle of the hoe forms with the ground is 71° . How far up the wall of the shed does the hoe 1.5 m reach, to the nearest tenth of a metre?

12. $\triangle ABC$ is an isosceles triangle. The height of the triangle is 3 cm, and the two acute angles at its base are each 56° . How long are the two equal sides, to the nearest tenth of a centimetre?

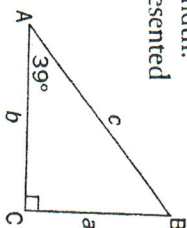
13. **Splintered tree** A tree is splintered by lightning 2 m up its trunk, so that the top part of the tree touches the ground. The angle the top of the tree forms with the ground is 70° . Before it was splintered, how tall was the tree, to the nearest tenth of a metre?

14. a) Evaluate $\sin 39^\circ$ with a calculator. Round your answer to the nearest thousandth.

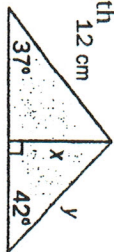
b) Use the diagram to write the ratio represented by your answer to part a).

c) What is the length of a in terms of c ?

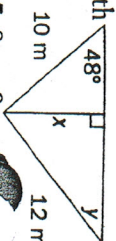
d) What is the length of c in terms of a ?



15. **Measurement** Find the length of x , then the length of y , to the nearest tenth of a centimetre.



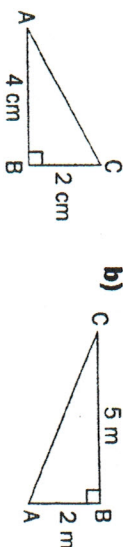
16. **Measurement** Find the length of x , to the nearest tenth of a metre, then the measure of $\angle y$, to the nearest degree.



17. **Communication** Write a problem similar to question 7, 8, or 9.

Practice Cosine Homework Practice

1. Calculate $\cos A$ and $\cos C$ in each triangle. Round answers to the nearest thousandth, if necessary.



2. Find each of the following, to the nearest thousandth.

- a) $\cos 30^\circ$ b) $\cos 45^\circ$ c) $\cos 60^\circ$ d) $\cos 89^\circ$
- e) $\cos 0^\circ$ f) $\cos 5^\circ$ g) $\cos 19^\circ$ h) $\cos 83^\circ$

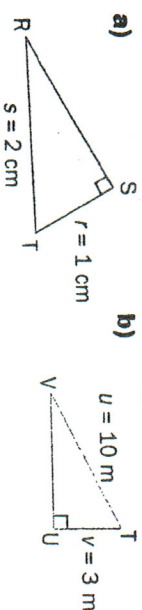
3. Find $\angle P$, to the nearest degree.

- a) $\cos P = 0.343$ b) $\cos P = 0.887$ c) $\cos P = 0.621$
- d) $\cos P = 0.019$ e) $\cos P = 0.731$ f) $\cos P = 0.524$

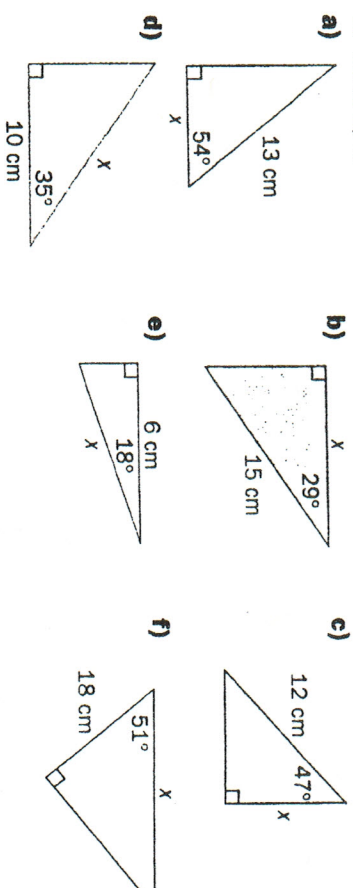
4. Find $\angle Q$, to the nearest degree.

- a) $\cos Q = \frac{1}{6}$ b) $\cos Q = \frac{5}{11}$ c) $\cos Q = \frac{5}{9}$
- d) $\cos Q = \frac{7}{8}$ e) $\cos Q = \frac{15}{16}$ f) $\cos Q = \frac{3}{14}$

5. Calculate $\cos T$ in each triangle. Then, find $\angle T$, to the nearest degree.



6. Find x , to the nearest tenth of a centimetre.

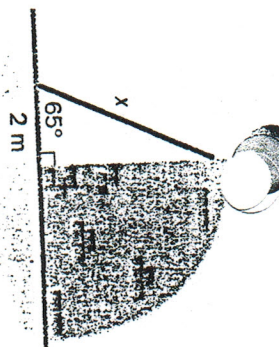


Applications and Problem Solving

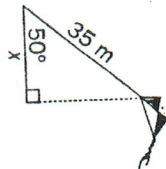
7. The side adjacent to the 74° angle in a right triangle is 6 cm long. How long is the hypotenuse, to the nearest tenth of a centimetre?

8. The hypotenuse of a right triangle is 10 cm long. How long is the side adjacent to the 21° angle, to the nearest tenth of a centimetre?

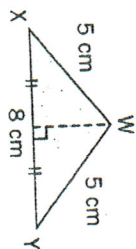
9. Ladder A ladder leans against a vertical wall and makes an angle of 65° with the ground. The foot of the ladder is 2 m from the base of the wall. Calculate the length of the ladder, to the nearest tenth of a metre.



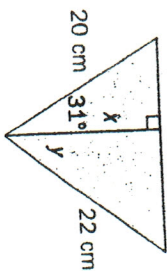
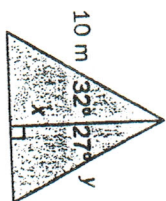
10. Kite A kite string is 35 m long. The angle the string makes with the ground is 50° . To the nearest metre, how far from the person holding the string is a person standing directly under the kite?



11. Find all the angles in $\triangle WXY$, to the nearest degree.



12. Communication a) Select three different values for an angle x between 0° and 90° . For each value of x , evaluate the expression $(\sin x)^2 + (\cos x)^2$.
b) Use the results from part a) to write a conjecture.
c) Verify your conjecture from part b) by simplifying $\left(\frac{\text{opposite}}{\text{hypotenuse}}\right)^2 + \left(\frac{\text{adjacent}}{\text{hypotenuse}}\right)^2$.
13. Measurement Find the length of x , then the length of y , to the nearest tenth of a metre.



14. Measurement Find the length of x , to the nearest tenth of a centimetre, then the measure of $\angle y$, to the nearest degree.
15. Use trigonometric ratios to verify that $\tan A = \frac{\sin A}{\cos A}$.
16. Communication Write a problem similar to questions 7 and 8. Have a classmate solve it.

- Practice 1. a) $\sin A = 0.448$, $\sin C = 0.896$
b) $\sin A = 0.667$, $\sin C = 0.742$ 2. a) 0.707 b) 0.866
c) 0.602 d) 0.423 e) 0 f) 1.000 3. a) 30° b) 72° c) 45°
d) 18° e) 86° f) 6° 4. a) 42° b) 49° c) 30° d) 24°
e) 7° f) 51° 5. a) $\frac{5}{11}$; 27° b) $\frac{1}{5}$; 12° 6. a) 13.1 cm
b) 29.0 cm c) 48.1 cm d) 15.7 cm e) 18.3 cm
f) 27.4 cm
Applications and Problem Solving 7. 13.1 cm 8. 56°
9. 16.2 cm 10. 35 m 11. 1.4 m 12. 3.6 cm 13. 4.1 m
14. a) 0.629 b) $\frac{a}{c}$ c) $a = 0.629c$ d) $c = \frac{a}{0.629}$
15. $x = 7.2$ cm, $y = 10.8$ cm 16. $x = 7.4$ m, $\angle y = 38^\circ$

Answers Cosine H.W. Practice

- Practice 1. a) $\cos A = 0.894$, $\cos C = 0.447$
b) $\cos A = 0.371$, $\cos C = 0.928$ 2. a) 0.866 b) 0.707
c) 0.5 d) 0.017 e) 1 f) 0.996 g) 0.946 h) 0.122
3. a) 70° b) 28° c) 52° d) 89° e) 43° f) 58° 4. a) 80°
b) 63° c) 56° d) 29° e) 20° f) 78° 5. a) $\frac{1}{2}$; 60°
b) $\frac{3}{10}$; 73° 6. a) 7.6 cm b) 13.1 cm c) 8.2 cm
d) 12.2 cm e) 6.3 cm f) 28.6 cm
Applications and Problem Solving 7. 21.8 cm
8. 9.3 cm 9. 4.7 m 10. 225 m 11. $\angle V = 106^\circ$,
 $\angle X = 37^\circ$, $\angle Y = 37^\circ$ 12. a) 1
b) $(\sin x)^2 + (\cos x)^2 = 1$ for all values of x

$$\text{c) } \left(\frac{\text{opposite}}{\text{hypotenuse}}\right)^2 + \left(\frac{\text{adjacent}}{\text{hypotenuse}}\right)^2 = \frac{(\text{opposite})^2 + (\text{adjacent})^2}{(\text{hypotenuse})^2} = 1$$

$$13. x = 8.5 \text{ m}, y = 9.5 \text{ m} \quad 14. x = 17.1 \text{ cm}, \angle y = 39^\circ$$

$$15. \text{L.S.} = \frac{\text{opposite}}{\text{adjacent}}, \quad \text{R.S.} = \frac{\frac{\text{opposite}}{\text{hypotenuse}}}{\frac{\text{adjacent}}{\text{hypotenuse}}} = \frac{\text{opposite}}{\text{adjacent}} \times \frac{\text{hypotenuse}}{\text{hypotenuse}} = \frac{\text{opposite}}{\text{adjacent}} = \text{L.S.}$$

$$\text{R.S.} = \frac{\frac{\text{opposite}}{\text{hypotenuse}}}{\frac{\text{adjacent}}{\text{hypotenuse}}} = \frac{\text{opposite}}{\text{adjacent}} \times \frac{\text{hypotenuse}}{\text{hypotenuse}} = \frac{\text{opposite}}{\text{adjacent}} = \text{L.S.}$$